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# JOB FUTURES

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*AN OCCUPATIONAL OUTLOOK TO 1992*

**1986-1987 EDITION**



Canada











Employment and  
Immigration Canada

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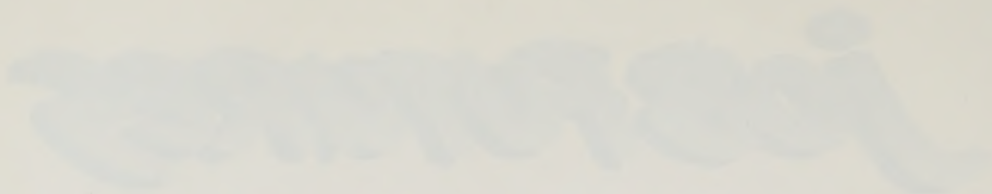
# ***JOB FUTURES***

***AN OCCUPATIONAL OUTLOOK TO 1992***

**1986-1987 EDITION**

Canadian Occupational  
Projection System  
(COPS)

WH-3-551E



AN OCCUPATIONAL OUTLOOK TO 1985

1986-1987 EDITION

Occupational Outlook  
1986-1987 Edition  
1986

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## Message from the Minister

What career should you choose? Each generation of young people has had to wrestle with this crucial decision. How do you translate your talents into a rewarding and promising career? How do you find the right job that challenges you and meshes with your aspirations?

The journey from the educational system to the job market has often been a perplexing one. It's never been easy. It still isn't and probably never will be.

Career counsellors have had special problems of their own. Relevant labour market research has not been abundant, often making it difficult for them to advise young people and to help with critical decisions.

This publication attempts to facilitate the counsellor's job by making available relevant labour market information that will help individuals make worthwhile career choices.

Employment and Immigration Canada has been analyzing the recent job market and trends as part of the development of the Canadian Occupational Projection System (COPS). Valuable information from COPS has been incorporated into this publication—the first of what we hope will be many occupational outlooks.

Job Futures does not have all the answers, nor is it a panacea for all our employment problems. It is, however, a valuable source of vocational guidance information.

Whether you're a counsellor or student, or someone interested in changing careers, Job Futures will give you an understanding of the choices in the job market today and where these jobs are probably going to be by 1992.

Good luck.

A handwritten signature in dark ink, reading "Flora MacDonald." in a cursive script.

Flora MacDonald



# How to use this handbook

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**To locate a particular field of study**

See 'Inside Part One'.

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**To locate a particular occupation**

See 'Inside Part Two'. The occupations are grouped according to the Canadian Classification and Dictionary of Occupations (CCDO) codes.

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**What do phrases like 'faster than average employment growth rate' mean?**

For help in interpreting the qualitative analysis in Job Futures refer to the Introduction on page 2

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**Are some occupations more sensitive to changes in technology or work organization?**

This information is included where applicable.

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**Need more career information?**

See page 3 of the Introduction for additional sources.

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## Preface

**I**t should be noted that the occupational information included in this Handbook involves projections based on information collected and analyzed through the Canadian Occupational Projection System (COPS). Projections should be interpreted with caution as no one can say, with certainty, what the future has in store. These projections are not predictions of what will necessarily happen. Rather, they represent one possible path for occupational requirements.

Many trade associations, professional societies, unions, and industrial organizations are able to provide valuable career information for counsellors and students on career choices.

For your convenience, some of these organizations are listed at the end of each occupational statement.

The listing of an organization, however, does not constitute in any way an endorsement or recommendation — either of the organization or of the information it may supply.

Job Futures is the first edition of what is planned to be a regularly published Handbook on careers in Canada. It encompasses the extent of COPS occupational research to date. Future editions will expand on this useful and interesting information about occupations and career choices in Canada.





# Job Futures

## Introduction

**C**hoosing a career or changing your line of work is a challenge. Especially in these uncertain economic times. There are questions that need answers. What are your prospects? What's the job market like? What jobs are sensitive to technological changes? Where do the best opportunities lie?

Job Futures helps you to answer these questions by providing valuable information on future occupational labour markets.

In addition to quantitative information, Job Futures features qualitative information from various elements of the labour market. Representatives of industry, labour, unions, provincial governments and education offered their special perspectives. The result is a comprehensive view of present and future labour market conditions. This information fleshes out the numbers and percentages.

## What's in Job Futures?

Job Futures has two parts.

**Part One** — Graduates, by Major Field of Study, to Occupation — the movement of graduates from field of study to occupation establishes the important link between the educational system and the occupation the individual was in two years after graduating.

**Part Two** — Occupation Outlooks — provides you with detailed outlook information that will help you to make intelligent decisions about your future.

## How Part One Works

Organized by university and community college study fields and the levels of degree/diploma, this section lists the major occupations in which full-time graduates (of 23 university and 18 community college fields of study) were employed two years after graduating.

These occupations define the dimensions of the job market for university and community college graduates, based on the 1984 National Graduate Survey of 1982 post-secondary graduates.

Please note that a major field of study can incorporate many specific study areas. These are listed in the Table of Contents for Part One.

The code numbers (such as 1132, 1171 etc.) and occupation titles come from Employment and Immigration's Canadian Classification and Dictionary of Occupations (CCDO). The first two digits of the number (i.e. 11) indicate the general field; the second two numbers (i.e. 32) indicate the specific occupation. Thus, 1132 would be managerial positions specifically in the social sciences.

When you've found out which occupations correspond to your field of study, you simply look for the appropriate code numbers in Part Two of Job Futures. There you will find an overview of the occupation and an indication of future prospects in this type of job.

It's important to note that, in Part One, the sample occupations reflect a range of possible outcomes resulting from educational choices. They do not represent all the options. Not all the occupations listed for a field represent ideal or even appropriate short-term career goals for recent graduates. Rather, they reflect the realities of the job market over the 1982-84 period. These occupations should provide guidance, but not limit a graduate's creative job search.

## How Part Two Works

Called Occupation Outlooks, Part Two is organized by occupation (sequentially by CCDO code) and covers 174 areas.

You'll be able to review the labour market situation in those occupations that most interest you and that best mesh with your aspirations.

It's important to note that this informa-

tion doesn't reflect longer-term career paths. Senior positions require substantial on-the-job experience and additional training. Nevertheless, many of the occupations listed are part of the potential senior management career path.

## Title and Tables

The title includes a numerical code and name of the occupational group that comes from Employment and Immigration's Canadian Classification and Dictionary of Occupations (CCDO), fifth edition, plus some sample occupations that are commonly found in this group. If you're looking for more detailed information of job categories, refer to the CCDO.

The table, designed for quick and easy reference, gives you an overview of the labour market situation of the particular occupational group. It also gives you the sex and age composition, and, for 63 occupations, the average salary two years after graduating (1984 dollars).

**Average Salary two years after graduation (1984 \$)** — Job Futures includes the average salary, in 1984 dollars, of those employed full time two years after graduating. This information comes from the 1984 National Graduate Survey of 1982 Graduates and includes 63 occupational categories.

**Employment Trends** — This states how many people, in thousands, were in this occupational category in 1985, the projected number for 1992, and the difference, plus or minus, between 1985 and 1992. This doesn't include those who withdraw from the labour force because of death or retirement, or those who have moved on to other occupations.

**Estimated Attrition** — This means the number of projected withdrawals from the labour force because of death and retirement. It doesn't

include movement from one occupational group into another.

**Total Requirements** — This is what you get when you add the 'change' from the Employment Trends section to the Estimated Attrition section. Roughly, it represents the personnel required to staff projected additional jobs plus the projected number of jobs vacated through attrition. This doesn't include estimates of job openings caused by persons moving from one occupation into another.

**Sex Composition** — This information comes from the 1981 Census and gives the proportion of males and females in the occupation. Next to this is the average sex composition of all occupations — 40 per cent for women and 60 per cent for men.

**Age Composition** — Also from the 1981 Census, this gives the proportions of young and old in the occupational category, compared to the proportion of those under 25 years (12 per cent) and those over 54 years (25 per cent) in the entire labour force.

## Occupation Descriptions

The descriptions provide incisive qualitative information gathered from representatives of industry, labour, education and government agencies. It includes the following information:

- The expected rate of employment growth, relative to the average for all occupations (approximately two per cent per year in Canada). This is based on the average annual rate of employment growth projection for the 1985 to 1992 period.
- The industrial sector(s) where the occupation is concentrated. The sectors that accounted for at least 10 per cent of the occupation's labour force in 1981 are listed in descending order of importance. Where

occupations are spread among numerous detailed sectors, broader industry sector descriptions are used.

- How sensitive the occupation is to overall economic activity. Highly sensitive occupations can be the first to rebound in a recovery and the quickest to decline in a recession. Employment prospects in highly sensitive occupations may be erratic because of volatility in the economy. This information is based on estimates of employment differences derived by comparing employment estimates associated with the high- and low-growth projections of the Canadian economy to 1992. These were developed for the Canadian Occupational Projection System (COPS).

The following information may or may not be included, depending on the occupation.

- A comment on sensitivity to changes in technology and work organization. This information is based on the analysis and comparison of data from the 1971 and 1981 Census of Canada.
- A description of technological, demographic or other factors that may affect the group. For example, the 'Employment Trends' figures are projections based on the unchanging occupational composition of industries. In reality, many occupations increase or decrease their representation within an industry over time for various reasons. Commentary on some of these reasons and the extent of their impact on the occupation should be used to qualify the estimates based on rigid occupational compositions. Pertinent commentary is supplied where possible.
- The sex breakdown of the labour force (1981 Census) within the occupation, indicating which sex is predominant.

- The relevant age distribution (1981 Census). The proportion of persons older than 54 is compared to the national proportion of 12 per cent. A high proportion of these workers could signal a large number of expected retirements. It could also mean that the occupation represents the upper levels of a career path (senior management). A high proportion of youth could imply a high job turnover, or that the occupation is an entry-level one.
- Geographical information (1981 Census). The provincial concentration is identified in cases where a single province accounted for at least 50 per cent of the national occupational labour force in 1981.
- Recent labour market conditions where applicable. The National Job Bank (NJB) and Unemployment Insurance Commission (UIC) were used as sources of this information. This applies to 1984 only.

### What Job Futures Can't Do

Job Futures is a companion to other publications and shouldn't be treated as stand-alone career information. It provides a reasonable view of expected labour market conditions in various occupational areas.

Job Futures doesn't provide information on training qualifications, full job descriptions or working conditions. To find out more about these, consult your nearest Canada Employment Centre, or refer to the CCDO; Occupational Qualifications Requirements, Information Canada 1973; and the Directory of Associations in Canada, fifth edition (Brian Land ed.)

An Employment and Immigration Canada publication, 'Careers Canada', provides extensive descriptions of other aspects of occupations (i.e. qualifications and working conditions etc.).

As well, Employment and Immigration Canada offers 'CHOICES', an interactive



computer system that allows students to ask pertinent questions about career choices. For information on 'Careers Canada' and 'CHOICES', contact a Canada Employment Centre or the Employment Support Services Branch, Employment and Immigration Canada, National Headquarters, Ottawa-Hull.

Also, for more information on earnings, a good source is Labour Canada's Wage Rates, Salaries and Hours of Labour, Oct. 1984; Supply and Services Canada, 1985.

The reported figures and narratives apply to the occupational title that normally represents an entire occupational group. Therefore, a statement that applies to a group may not apply to each one of the individual occupations listed. For example, if a statement refers to the art restoring field, it does not necessarily apply to the paintings restorer, even though they're both part of Technicians in Library, Museum and Archival Sciences.

Not all the occupations in the Canadian Classification and Dictionary of Occupations (CCDO) are listed because not all have easily recognized supply channels. For some occupations, training is industry specific with low-skilled entry requirements and promotion from within. For others, the skill requirements are such that high school graduates are the main source of new supply.

Estimates of labour force withdrawals refer only to voluntary departures from the labour force. Inter-occupational transfers are absent owing to lack of data.

Job Futures is a product of the Canadian Occupational Projection System (COPS), a labour supply and demand information and data bank designed by Employment and Immigration Canada.

Inside Part One

Community College Fields of Study

	Page		Page
<b>Commercial Design</b>	<b>11</b>	Radio, Theatre and T.V. Arts	
Commercial Arts		Theatre Arts	
Packaging Design		Theatre Production	
		Applied Arts	
		Watchmaking	
		Piano Technologies	
<b>Graphic Arts</b>	<b>12</b>		
Graphic Arts		<b>Business, Management and Commerce</b>	<b>14</b>
		Administration, General	
<b>Other Fine, Applied and Performing Arts</b>	<b>13</b>	Aviation Management	
Animation		Business, General	
Photographic Arts		Business Administration	
Photography		Industrial Management	
Applied and Fine Arts		Industrial Relations	
Art Conservation		Institute Management	
Ceramics		Legal Office Administration	
Fine Arts		Management Technologies	
Jewel Arts		Manufacturing Management	
Jewellery Repair		Municipal Administration	
Music		Operations Management	
Dance, Performing Arts		Personnel Administration	
Material Arts		Public Administration	
Performing Arts Administration		Residential Construction Management	
Crafts and Design		Transport Administration	
Creative Arts		Co-op Administration	
Fashion Arts		Apparel Management	
Furniture and Woodworking		Micro Computer Management	
Interior Design (Furniture)			
Design Arts (Commercial)		<b>Secretarial Arts and Sciences</b>	<b>16</b>
Furniture Renovation		Court Reporting	
Garment Making		Health Records Technologies	
Library Arts Technologies		Law Clerk	
Library (or Documentation)		Medical Archives	
Technologies		Medical Records	
Museum Technologies			

	Page		Page
Secretary, Administration		<b>Nursing</b>	<b>19</b>
Secretary, General		Dental Nursing	
Secretary, Legal		Nursing	
Secretary, Medical		Nursing, Critical Care	
Word Processing		RNA Operating Room Technique	
<b>Data Processing and</b>		Nursing, Extended Care	
<b>Computer Science</b>	<b>17</b>	Nursing, Neonatal	
Computer Programming		Occupational Health Nursing	
Computer Science and Systems		Nursing, Operating Room	
Computer Technologies		Nursing, Refresher	
Data Processing		Nursing, Supplementary	
<b>Primary Industries</b>	<b>18</b>	Nursing, Psychiatric	
Agricultural Business, Farm Machinery		Nursing, Mental Health	
Agricultural Engineering		Public Health	
Agricultural Laboratory Technologies		<b>Other Medical and</b>	
Agriculture, Crops and Livestock		<b>Dental Services</b>	<b>20</b>
Animal Care		Ambulance and Emergency Care	
Animal Science		Chiropractic	
Crops, Field and Horticultural		Clinical Laboratory and X-Ray	
Equine Care, Horse Husbandry		Cytology	
Equine Studies		Dental Hygiene or Denture Therapy	
Irrigation		Emergency Para-Medical Care	
Farm Ranch Livestock Production		Nuclear Medicine	
Dairy Technologies		Physiotherapy, Therapeutic Recreation	
Plant Science Technologies		Radiodiagnostics Technologies	
Agriculture Chemical, Soils and		Radiology	
Fertilizer		Radiotherapy	
Apiarist/Beekeeper		Respiratory Technology	
Floriculture		Clinical Chemistry	
Forest Resources		Cardiovascular Perfusion	
Forestry		Ultrasonography	
Forestry Management		Medical Radiography	
Forestry (Wood) Products Technologies		Hearing Aid Consultant	
Horticulture and Landscaping		Medical Laboratory Technician	
Landscape Technologies		Medical Laboratory Assistant	
Horticulture, Fruit		Virology	
Horticulture, Ornamental		Microbiology	
Turf Grass Management		Immunology	
Fishing and Fisheries Technologies		Histotechnology	
		Biomedical Equipment	

	Page		Page
Dental Laboratory Technology		Mechanics)	
Dental Mechanic Technology		Marine Engineering	
Dental Technology		Mechanical Engineering	
Optical Prosthesis		Mechanical Technology	
Orthopaedy Prosthesis		Motorized Equipment	
Optical Dispensing Optician		Power Engineering	
Technology		Recreational Vehicles	
Biological (Laboratory) Technology		Energy Systems	
Dietetics, Dietary Technology		Materials Engineering Technology	
Medical Electrophysiology			
Mental Retardation Development		<b>Chemical Technologies</b>	<b>23</b>
Environmental Health		Analytical Chemistry	
		Biochemical Technology	
<b>Electronic and Electrical</b>		Chemical and Metallurgical	
<b>Technologies</b>	<b>21</b>	Technology	
Avionics		Chemical Technology	
Avionics Maintenance		Chemistry, Dyes	
Broadcasting Electronics		Industrial Chemical Technology	
Control Systems Technology		Industrial Microbiology	
Electrical Controls Technology		Laboratory Science Technology	
Electrical Electronics		Pharmacy, Pharmaceutical Technology	
Electrical Technology		Photographic Laboratory	
Electric Power Technology		Plastics	
Electro-Mechanic Technology		Textile Technology	
Electronics Technology			
Electronics - T.V. and Audio		<b>Architecture</b>	<b>24</b>
Marine Electronics		Architecture	
Recording Engineering		Architectural Draughting	
Telecommunications Technology			
Industrial Electronics		<b>Other Engineering and</b>	
		<b>Related Technologies</b>	<b>25</b>
<b>Mechanical Technologies</b>	<b>22</b>	Geology Technologies	
Agricultural Equipment Mechanics		Metallurgical Processing	
Aircraft Maintenance Technology		Metallurgical Technologies	
Auto Technology		Minerallurgy	
Diesel, Motor Power		Mineral Technologies	
Fluid Power Technology		Mining Technologies	
Heavy Equipment Technology		Paper Making Technologies	
Helicopter Engineering		Petroleum, Resources Drill	
Industrial (Heavy Equipment		Technologies	





	Page		Page
<b>Mass Communication</b>	<b>27</b>	Parks and Recreation Operation	
Advertising		Physical Education	
Communications		Recreational Leader	
Communication Arts		Recreation Administration	
Media Arts Technology		Technologies	
Broadcasting		Tourism	
Journalism		Travel and Tourism	
Public Relations		Travel Counsellor	
		Arena Management	
		Hunting and Fishing	
		Yachting Studies	
<b>Community Service, Social Welfare, Household Science</b>	<b>28</b>	Counsellor - Addiction	
Correctional Services		Counsellor - Mental Retardation	
Correctional Technologies		Counsellor - Special Care	
Correctional Worker			
Criminal Justice		<b>General Arts and Science, Education, Law</b>	<b>29</b>
Fire Protection Technologies		Audio-Visual Technology	
Judicial Technologies, Law and Probation		Book Edit and Publishing	
Law and Security		Cinematography	
Para-Legal Technologies		Film Production	
Police Technologies		Printing and Bookbinding	
Prevention Technologies		Recorded Music Production	
Behavioural Science		Visual Arts	
Child Care Worker		Early Childhood Education	
Family Day Care Worker		Teacher Aide	
Human Relations		Teacher Education	
Human Services		Community Planning	
Human Studies		Community Services	
Workshop Rehabilitation Services		Consumer and Family Studies	
Social Assistance		Urban Design	
Social Psychological Research		Youth Development	
Social Services Technologies		Funeral Services	
Social Services Worker		Public Speaking	
Canadian Nanny		Underwater Skills	
Applied Social Sciences		Applied Research	
Community Recreational Leaders			
Equitation			
Gymnastics Coach			
Historical Natural Sites Interpretation			
Leisure Services			



## ERRATA

Please note the following changes to Part Two of your Job Futures book:

Occupation 2351	Employment trends ('000) 1985-92 change:	1.3
Occupation 2731	Total Requirements ('000) 1985-92	: 30.3
Occupation 2733	Total Requirements ('000) 1985-92	: 8.5
Occupation 2739	Total Requirements ('000) 1985-92	: 5.5
Occupation 2791	Total Requirements ('000) 1985-92	: 0.0



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<i>Field of Study:</i> 11	<b><i>Commercial Design</i></b>	<i>Level:</i> <b><i>Community College</i></b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Career Program**

33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	44.4
3314	<i>Advertising and illustrating artists</i>	33.3
11	<i>Managerial, administrative and related occupations</i>	11.1
41	<i>Clerical and related occupations</i>	11.1
51	<i>Sales occupations</i>	11.1
9999	<i>Other occupations</i>	22.2

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<i>Field of Study:</i> 12	<b>Graphic Arts</b>	<i>Level:</i> <b>Community College</b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Career Program**

33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	25.0
3314	<i>Advertising and illustrating artists</i>	18.8
95	<i>Other crafts and equipment operating occupations</i>	12.5
11	<i>Managerial, administrative and related occupations</i>	6.3
21	<i>Occupations in natural sciences, engineering and mathematics</i>	6.3
41	<i>Clerical and related occupations</i>	6.3
51	<i>Sales occupations</i>	6.3
61	<i>Service occupations</i>	6.3
9998	<i>Not employed</i>	12.5
9999	<i>Other occupations</i>	18.8

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<i>Field of Study:</i> 13	<i>Other Fine, Applied and Performing Arts</i>	<i>Level:</i> <b>Community College</b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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### Career Program

33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	20.0
3313	<i>Product and interior designers</i>	10.0
41	<i>Clerical and related occupations</i>	16.7
51	<i>Sales occupations</i>	10.0
5135	<i>Sales workers, commodities, N.E.C.</i>	6.7
11	<i>Managerial, administrative and related occupations</i>	6.7
23	<i>Occupations in social sciences and related fields</i>	6.7
85	<i>Product fabricating, assembling and repairing occupations</i>	6.7
21	<i>Occupations in natural sciences, engineering and mathematics</i>	3.3
27	<i>Teaching and related occupations</i>	3.3
61	<i>Service occupations</i>	3.3
9998	<i>Not employed</i>	23.3
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i> 21	<b><i>Business, Management and Commerce</i></b>	<i>Level:</i> <b><i>Community College</i></b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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### Career Program

41	<i>Clerical and related occupations</i>	28.6
4131	<i>Bookkeepers and accounting clerks</i>	10.0
4111	<i>Secretaries and stenographers</i>	3.6
4133	<i>Tellers and cashiers</i>	2.9
4143	<i>Electronic data-processing equipment operators</i>	1.4
4155	<i>Stock clerks and related occupations</i>	1.4
4197	<i>General office clerks</i>	1.4
11	<i>Managerial, administrative and related occupations</i>	21.4
1137	<i>Sales and advertising management occupations</i>	5.7
1171	<i>Accountants, auditors and other financial officers</i>	5.7
1135	<i>Financial management occupations</i>	1.4
51	<i>Sales occupations</i>	13.6
5135	<i>Sales workers, commodities, N.E.C.</i>	5.7
5133	<i>Commercial travellers</i>	2.9
5171	<i>Insurance sales occupations and agents</i>	1.4
61	<i>Service occupations</i>	8.6
6125	<i>Food and beverage serving occupations</i>	2.1
21	<i>Occupations in natural sciences, engineering and mathematics</i>	2.1
2183	<i>Systems analysts, computer programmers and related occupations</i>	1.4
23	<i>Occupations in social sciences and related fields</i>	2.1
33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	2.1
3370	<i>Coaches, trainers, instructors and managers, sport and recreation</i>	1.4
81/82	<i>Processing occupations</i>	1.4
85	<i>Product fabricating, assembling and repairing occupations</i>	1.4
87	<i>Construction trades occupations</i>	1.4

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27	<i>Teaching and related occupations</i>	0.7
31	<i>Occupations in medicine and health</i>	0.7
71	<i>Farming, horticultural and animal-husbandry occupations</i>	0.7
91	<i>Transport equipment operating occupations</i>	0.7
9998	<i>Not employed</i>	11.4
9999	<i>Other occupations</i>	2.9

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*Field of Study:* 31      *Secretarial Arts and Science*      *Level:* *Community College*

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*Occupation of Graduate Two Years After Graduation*      *Per Cent Distribution*

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**Career Program**

41	<i>Clerical and related occupations</i>	71.4
4111	<i>Secretaries and stenographers</i>	45.2
4143	<i>Electronic data-processing equipment operators</i>	6.0
4131	<i>Bookkeepers and accounting clerks</i>	3.6
4171	<i>Receptionists and information clerks</i>	3.6
4133	<i>Tellers and cashiers</i>	2.4
4197	<i>General office clerks</i>	2.4
11	<i>Managerial, administrative and related occupations</i>	6.0
51	<i>Sales occupations</i>	2.4
61	<i>Service occupations</i>	2.4
21	<i>Occupations in natural sciences, engineering and mathematics</i>	1.2
23	<i>Occupations in social sciences and related fields</i>	1.2
31	<i>Occupations in medicine and health</i>	1.2
85	<i>Product fabricating, assembling and repairing occupations</i>	1.2
9998	<i>Not employed</i>	10.7
9999	<i>Other occupations</i>	2.4

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<i>Field of Study:</i> 41	<b><i>Data Processing and Computer Science</i></b>	<i>Level:</i> <b><i>Community College</i></b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Career Program**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	51.4
2183	<i>Systems analysts, computer programmers and related occupations</i>	48.6
41	<i>Clerical and related occupations</i>	18.9
4143	<i>Electronic data-processing equipment operators</i>	8.1
51	<i>Sales occupations</i>	5.4
11	<i>Managerial, administrative and related occupations</i>	2.7
27	<i>Teaching and related occupations</i>	2.7
61	<i>Service occupations</i>	2.7
85	<i>Product fabricating, assembling and repairing occupations</i>	2.7
9998	<i>Not employed</i>	10.8
9999	<i>Other occupations</i>	2.7

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<i>Field of Study:</i> 51	<i>Primary Industries</i>	<i>Level:</i> Community College
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Career Program**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	21.4
2135	<i>Life sciences technologists and technicians</i>	7.1
2117	<i>Physical sciences technologists and technicians</i>	4.8
71	<i>Farming, horticultural and animal-husbandry occupations</i>	19.0
7195	<i>Nursery and related workers</i>	4.8
11	<i>Managerial, administrative and related occupations</i>	7.1
31	<i>Occupations in medicine and health</i>	7.1
75	<i>Forestry and logging occupations</i>	7.1
41	<i>Clerical and related occupations</i>	4.8
51	<i>Sales occupations</i>	4.8
61	<i>Service occupations</i>	4.8
81/82	<i>Processing occupations</i>	4.8
85	<i>Product fabricating, assembling and repairing occupations</i>	2.4
87	<i>Construction trades occupations</i>	2.4
9998	<i>Not employed</i>	14.3
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i> 61	<i>Nursing</i>	<i>Level:</i> <i>Community College</i>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Career Program**

31	<i>Occupations in medicine and health</i>	88.3
3131	<i>Nurses, graduate, except supervisors</i>	82.9
3134	<i>Registered nursing assistants</i>	3.6
11	<i>Managerial, administrative and related occupations</i>	0.9
41	<i>Clerical and related occupations</i>	0.9
51	<i>Sales occupations</i>	0.9
61	<i>Service occupations</i>	0.9
9998	<i>Not employed</i>	6.3
9999	<i>Other occupations</i>	1.8

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*Field of Study:* 62      *Other Medical and Dental Services*      *Level:* **Community College**

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*Occupation of Graduate Two Years After Graduation*      *Per Cent Distribution*

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**Career Program**

31	<i>Occupations in medicine and health</i>	70.2
3157	<i>Denturists, dental hygienists, dental assistants and dental technicians</i>	29.8
3156	<i>Medical laboratory technologists and technicians</i>	17.5
3155	<i>Radiological technicians</i>	7.0
3117	<i>Osteopaths and chiropractors</i>	3.5
21	<i>Occupations in natural sciences, engineering and mathematics</i>	3.5
27	<i>Teaching and related occupations</i>	3.5
61	<i>Service occupations</i>	3.5
11	<i>Managerial, administrative and related occupations</i>	1.8
23	<i>Occupations in social sciences and related fields</i>	1.8
41	<i>Clerical and related occupations</i>	1.8
87	<i>Construction trades occupations</i>	1.8
91	<i>Transport equipment operating occupations</i>	1.8
9998	<i>Not employed</i>	10.5
9999	<i>Other occupations</i>	0.0

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<i>Field of Study: 71</i>	<b><i>Electronic and Electrical Technologies</i></b>	<i>Level: Community College</i>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Career Program**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	26.8
2165	<i>Architectural and engineering technologists and technicians</i>	17.9
85	<i>Product fabricating, assembling and repairing occupations</i>	26.8
8535	<i>Electronic and related equipment installing and repairing occupations, N.E.C.</i>	10.7
8533	<i>Electrical and related equipment installing and repairing occupations, N.E.C.</i>	3.6
87	<i>Construction trades occupations</i>	7.1
8735	<i>Wire communications and related equipment installing and repairing occupations</i>	3.6
11	<i>Managerial, administrative and related occupations</i>	5.4
51	<i>Sales occupations</i>	5.4
33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	3.6
41	<i>Clerical and related occupations</i>	3.6
95	<i>Other crafts and equipment operating occupations</i>	3.6
61	<i>Service occupations</i>	1.8
9998	<i>Not employed</i>	10.7
9999	<i>Other occupations</i>	5.4

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Field of Study: 72      **Mechanical Technologies**      Level: *Community College*

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Occupation of Graduate Two Years After Graduation      Per Cent Distribution

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**Career Program**

85	Product fabricating, assembling and repairing occupations	25.0
8581	Motor-vehicle mechanics and repairers	8.3
8584	Industrial, farm and construction machinery mechanics and repairers	8.3
21	Occupations in natural sciences, engineering and mathematics	16.7
51	Sales occupations	8.3
11	Managerial, administrative and related occupations	4.2
71	Farming, horticultural and animal-husbandry occupations	4.2
81/82	Processing occupations	4.2
83	Machine related occupations	4.2
87	Construction trades occupations	4.2
91	Transport equipment operating occupations	4.2
95	Other crafts and equipment operating occupations	4.2
9998	Not employed	8.3
9999	Other occupations	12.5

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<i>Field of Study:</i> 73	<b><i>Chemical Technologies</i></b>	<i>Level:</i> <b><i>Community College</i></b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Career Program**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	50.0
2117	<i>Physical sciences technologists and technicians</i>	30.0
31	<i>Occupations in medicine and health</i>	10.0
81/82	<i>Processing occupations</i>	10.0
85	<i>Product fabricating, assembling and repairing occupations</i>	10.0
9999	<i>Other occupations</i>	20.0

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<i>Field of Study:</i> 74	<i>Architecture</i>	<i>Level:</i> Community College
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Career Program**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	30.8
2163	<i>Draughting occupations</i>	11.5
2165	<i>Architectural and engineering technologists and technicians</i>	7.7
11	<i>Managerial, administrative and related occupations</i>	15.4
87	<i>Construction trades occupations</i>	11.5
41	<i>Clerical and related occupations</i>	7.7
51	<i>Sales occupations</i>	7.7
61	<i>Service occupations</i>	3.8
85	<i>Products fabricating, assembling and repairing occupations</i>	3.8
9998	<i>Not employed</i>	15.4
9999	<i>Other occupations</i>	3.8

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*Field of Study:* 75      ***Other Engineering  
and Related  
Technologies***      *Level:* ***Community College***

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*Occupation of Graduate Two Years  
After Graduation*      *Per Cent  
Distribution*

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**Career Program**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	29.8
2163	<i>Draughting occupations</i>	8.5
2165	<i>Architectural and engineering technologists and technicians</i>	6.4
2161	<i>Surveyors</i>	4.3
85	<i>Product fabricating, assembling and repairing occupations</i>	10.6
11	<i>Managerial, administrative and related occupations</i>	6.4
41	<i>Clerical and related occupations</i>	6.4
83	<i>Machine related occupations</i>	6.4
87	<i>Construction trades occupations</i>	6.4
61	<i>Service occupations</i>	4.3
33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	2.1
51	<i>Sales occupations</i>	2.1
71	<i>Farming, horticultural and animal-husbandry occupations</i>	2.1
81/82	<i>Processing occupations</i>	2.1
91	<i>Transport equipment operating occupations</i>	2.1
95	<i>Other crafts and equipment operating occupations</i>	2.1
9998	<i>Not employed</i>	12.8
9999	<i>Other occupations</i>	4.3

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*Field of Study:* 81      ***Transportation***      *Level:* ***Community College***

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*Occupation of Graduate Two Years  
After Graduation*      *Per Cent  
Distribution*

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**Career Program**

41	<i>Clerical and related occupations</i>	16.7
85	<i>Product fabricating, assembling and repairing occupations</i>	16.7
91	<i>Transport equipment operating occupations</i>	16.7
9999	<i>Other occupations</i>	50.0

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<i>Field of Study: 91</i>	<i>Mass Communication</i>	<i>Level: Community College</i>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Career Program**

33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	33.3
3351	<i>Writers and editors, publication</i>	25.0
95	<i>Other crafts and equipment operating occupations</i>	16.7
11	<i>Managerial, administrative and related occupations</i>	8.3
41	<i>Clerical and related occupations</i>	8.3
51	<i>Sales occupations</i>	8.3
9999	<i>Other occupations</i>	25.0

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*Field of Study: 101      Community Service,  
Social Welfare,  
Household Science*      *Level: Community College*

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*Occupation of Graduate Two Years  
After Graduation*      *Per Cent  
Distribution*

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**Career Program**

61	<i>Service occupations</i>	27.4
6112	<i>Police officers and detectives, government</i>	8.2
6115	<i>Guards and related security occupations</i>	4.1
6121	<i>Chefs and cooks</i>	2.7
6141	<i>Funeral directors, embalmers and related occupations</i>	2.7
41	<i>Clerical and related occupations</i>	15.1
23	<i>Occupations in social sciences and related fields</i>	13.7
2333	<i>Occupations in welfare and community services</i>	5.5
2331	<i>Social workers</i>	4.1
11	<i>Managerial, administrative and related occupations</i>	6.8
27	<i>Teaching and related occupations</i>	5.5
51	<i>Sales occupations</i>	5.5
31	<i>Occupations in medicine and health</i>	4.1
33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	1.4
71	<i>Farming, horticultural and animal-husbandry occupations</i>	1.4
85	<i>Product fabricating, assembling and repairing occupations</i>	1.4
91	<i>Transport equipment operating occupations</i>	1.4
93	<i>Material-handling and related occupations, N.E.C.</i>	1.4
9998	<i>Not employed</i>	12.3
9999	<i>Other occupations</i>	2.7

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<i>Field of Study: 111</i>	<b><i>General Arts and Science, Education, Law</i></b>	<i>Level: Community College</i>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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### **Career Program**

27	<i>Teaching and related occupations</i>	35.7
2731	<i>Elementary and kindergarten teachers</i>	19.0
2795	<i>Teachers of exceptional students, N.E.C.</i>	11.9
2739	<i>Elementary and secondary school teaching and related occupations, N.E.C.</i>	4.8
23	<i>Occupations in social sciences and related fields</i>	19.0
2331	<i>Social workers</i>	7.1
2333	<i>Occupations in welfare and community services</i>	4.8
61	<i>Service occupations</i>	11.9
41	<i>Clerical and related occupations</i>	4.8
11	<i>Managerial, administrative and related occupations</i>	2.4
21	<i>Occupations in natural sciences, engineering and mathematics</i>	2.4
31	<i>Occupations in medicine and health</i>	2.4
51	<i>Sales occupations</i>	2.4
85	<i>Product fabricating, assembling and repairing occupations</i>	2.4
9998	<i>Not employed</i>	14.3
9999	<i>Other occupations</i>	2.4

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# Inside Part One

## University Fields of Study

	Page		Page
<b>Business Management and Commerce</b>	<b>35</b>	Languages and/or literatures, other History Journalism Other Mass Communication Philosophy Religious Studies Theological Studies Translation and Interpretation	
Commerce, Management, Business Administration Specialized Administration Studies Secretarial Studies			
<b>Education</b>	<b>37</b>	<b>Law</b>	<b>43</b>
Elementary/Secondary Teacher Higher Education - Post Secondary Kindergarten - Pre-School Non-teaching fields Physical Education Kinesiology Recreation		Law and Jurisprudence	
		<b>Social Work</b>	<b>44</b>
		Social Work and Social Welfare	
<b>Fine Arts</b>	<b>39</b>	<b>Other Social Sciences</b>	<b>45</b>
Fine Arts Other Performing Arts Applied Arts Music		Anthropology Archaeology Canadian Studies Area Studies, other Other Social Services Linguistics Economics Geography Man/Environment Studies Political Science Public Administration Psychology Sociology Criminology Demography	
<b>Library and Records Sciences</b>	<b>40</b>		
Library Science Other Records Science			
<b>Other Humanities</b>	<b>41</b>		
Classics, dead language English language, literature French language			

	Page		Page
<b>Veterinary Science</b>	<b>48</b>	Engineering Science	
Veterinary Medicine		Engineering General	
Veterinary Sciences		Forestry	
Veterinary Medicine Specialties		Landscape Architecture	
<b>Other Agriculture and Biology</b>	<b>49</b>	<b>Dentistry</b>	<b>55</b>
Agriculture		Dentistry	
Biochemistry		Dental Specialties	
Biology		<b>Medicine</b>	<b>56</b>
Botany		Medicine	
Household Science Related		Basic Medical Sciences	
Zoology		Medical Specialties	
Fisheries and Wildlife Management		Paraclinical Sciences	
Biophysics		Surgical Specialties	
<b>Civil Engineering</b>	<b>51</b>	<b>Nursing</b>	<b>57</b>
<b>Electrical Engineering</b>	<b>52</b>	<b>Pharmacy</b>	<b>58</b>
<b>Mechanical Engineering</b>	<b>53</b>	<b>Rehabilitation Medicine</b>	<b>59</b>
<b>Other Applied Sciences</b>	<b>54</b>	<b>Other Health</b>	<b>60</b>
Architecture		Epidemiology and Public Health	
Chemical Engineering		Optometry	
Aeronautical and Aerospace Engineering		Medical Technology	
Design Systems Engineering		Other Health Occupations	
Industrial Engineering			
Mining Engineering			
Metallurgical Engineering			
Other Engineering			

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	Page	Page
<b>Geology</b>	<b>61</b>	
<hr/>		
<b>Mathematics</b>	<b>62</b>	
Computer Science		
Mathematics		
<hr/>		
<b>Other Physical Sciences</b>	<b>63</b>	
Chemistry		
Physics		
Metallurgy Materials Science		
Meteorology		
Oceanography and Water Studies		





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<i>Field of Study:</i>	<i>Business Management and Commerce</i>	<i>Level: University</i>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Bachelors**

11	<i>Managerial, administrative and related occupations</i>	45.7
1171	<i>Accountants, auditors and other financial officers</i>	28.7
1137	<i>Sales and advertising management occupations</i>	3.9
1135	<i>Financial management occupations</i>	3.1
41	<i>Clerical and related occupations</i>	12.4
4131	<i>Bookkeepers and accounting clerks</i>	5.4
51	<i>Sales occupations</i>	10.9
5133	<i>Commercial travellers</i>	3.1
21	<i>Occupations in natural sciences, engineering and mathematics</i>	7.8
2183	<i>Systems analysts, computer programmers and related occupations</i>	5.4
23	<i>Occupations in social sciences and related fields</i>	2.3
61	<i>Service occupations</i>	2.3
9998	<i>Not employed</i>	10.9
9999	<i>Other occupations</i>	7.8

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<i>Field of Study:</i>	<i>Business Management and Commerce</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

**Masters**

11	<i>Managerial, administrative and related occupations</i>	56.5
1171	<i>Accountants, auditors and other financial officers</i>	17.4
1135	<i>Financial management occupations</i>	8.7
1137	<i>Sales and advertising management occupations</i>	8.7
1130	<i>General managers and other senior officials</i>	4.3
1143	<i>Production management occupations</i>	4.3
21	<i>Occupations in natural sciences, engineering and mathematics</i>	13.0
2145	<i>Industrial engineers</i>	4.3
2183	<i>Systems analysts, computer programmers and related occupations</i>	4.3
23	<i>Occupations in social sciences and related fields</i>	8.7
2311	<i>Economists</i>	4.3
27	<i>Teaching and related occupations</i>	4.3
2711	<i>University teachers</i>	4.3
41	<i>Clerical and related occupations</i>	4.3
51	<i>Sales occupations</i>	4.3
9998	<i>Not employed</i>	4.3
9999	<i>Other occupations</i>	4.3

<i>Field of Study:</i>	<i>Education</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

### Bachelors

27	<i>Teaching and related occupations</i>	59.6
2731	<i>Elementary and kindergarten teachers</i>	29.2
2733	<i>Secondary school teachers</i>	15.7
2739	<i>Elementary and secondary school teaching and related occupations, N.E.C.</i>	6.7
2795	<i>Teachers of exceptional students, N.E.C.</i>	5.6
11	<i>Managerial, administrative and related occupations</i>	5.1
41	<i>Clerical and related occupations</i>	5.1
23	<i>Occupations in social sciences and related fields</i>	3.4
2333	<i>Occupations in welfare and community services</i>	1.7
33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	3.4
3370	<i>Coaches, trainers, instructors and managers, sport and recreation</i>	2.2
31	<i>Occupations in medicine and health</i>	2.2
61	<i>Service occupations</i>	2.2
51	<i>Sales occupations</i>	1.7
9998	<i>Not employed</i>	13.5
9999	<i>Other occupations</i>	3.9

<i>Field of Study:</i>	<i>Education</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

**Masters**

27	<i>Teaching and related occupations</i>	50.0
2733	<i>Secondary school teachers</i>	18.8
2731	<i>Elementary and kindergarten teachers</i>	12.5
2795	<i>Teachers of exceptional students, N.E.C.</i>	6.3
11	<i>Managerial, administrative and related occupations</i>	18.8
1133	<i>Administrators in teaching and related fields</i>	12.5
23	<i>Occupations in social sciences and related fields</i>	18.8
2315	<i>Psychologists</i>	6.3
2331	<i>Social workers</i>	6.3
2391	<i>Educational and vocational counsellors</i>	6.3
31	<i>Occupations in medicine and health</i>	6.2
9998	<i>Not employed</i>	6.2
9999	<i>Other occupations</i>	0.0

<i>Field of Study:</i>	<i>Education</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

**Doctorates**

27	<i>Teaching and related occupations</i>	50.0
2711	<i>University teachers</i>	50.0
999	<i>Other occupations</i>	50.0

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<i>Field of Study:</i>	<i>Fine Arts</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Bachelors**

33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	17.9
3313	<i>Product and interior designers</i>	10.7
27	<i>Teaching and related occupations</i>	14.3
41	<i>Clerical and related occupations</i>	10.7
9998	<i>Not employed</i>	21.4
9999	<i>Other occupations</i>	35.7

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<i>Field of Study:</i>	<i>Fine Arts</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Masters**

27	<i>Teaching and related occupations</i>	50.0
9999	<i>Other occupations</i>	50.0

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<i>Field of Study:</i>	<b><i>Library and Records Sciences</i></b>	<i>Level:</i>	<b><i>University</i></b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Masters**

23	<i>Occupations in social sciences and related fields</i>	50.0
2351	<i>Librarians, archivists and conservators</i>	50.0
11	<i>Managerial, administrative and related occupations</i>	12.5
27	<i>Teaching and related occupations</i>	12.5
41	<i>Clerical and related occupations</i>	12.5
9998	<i>Not employed</i>	12.5
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i>	<i>Other Humanities</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Bachelors**

33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	13.6
3351	<i>Writers and editors, publication</i>	6.2
11	<i>Managerial, administrative and related occupations</i>	12.3
41	<i>Clerical and related occupations</i>	12.3
4111	<i>Secretaries and stenographers</i>	3.7
27	<i>Teaching and related occupations</i>	11.1
2731	<i>Elementary and kindergarten teachers</i>	3.7
25	<i>Occupations in religion</i>	6.2
51	<i>Sales occupations</i>	6.2
23	<i>Occupations in social sciences and related fields</i>	3.7
61	<i>Service occupations</i>	3.7
9998	<i>Not employed</i>	18.5
9999	<i>Other occupations</i>	12.3

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<i>Field of Study:</i>	<i>Other Humanities</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

**Masters**

27	<i>Teaching and related occupations</i>	20.0
2733	<i>Secondary school teachers</i>	10.0
33	<i>Artistic, literary, performing arts and related occupations and occupations in sport and recreation</i>	20.0
3351	<i>Writers and editors, publication</i>	10.0
3355	<i>Translators and interpreters</i>	10.0
11	<i>Managerial, administrative and related occupations</i>	10.0
25	<i>Occupations in religion</i>	10.0
9998	<i>Not employed</i>	20.0
9999	<i>Other occupations</i>	20.0

<i>Field of Study:</i>	<i>Other Humanities</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

**Doctorates**

27	<i>Teaching and related occupations</i>	50.0
2711	<i>University teachers</i>	50.0
9999	<i>Other occupations</i>	50.0

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<i>Field of Study:</i>	<b><i>Law</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Bachelors**

23	<i>Occupations in social sciences and related fields</i>	68.6
2343	<i>Lawyers and notaries</i>	62.9
9998	<i>Not employed</i>	20.0
9999	<i>Other occupations</i>	11.4

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<i>Field of Study:</i>	<i>Social Work</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Bachelors**

23	<i>Occupations in social sciences and related fields</i>	68.8
2331	<i>Social workers</i>	50.0
9998	<i>Not employed</i>	18.8
9999	<i>Other occupations</i>	12.5

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<i>Field of Study:</i>	<i>Social Work</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Masters**

23	<i>Occupations in social sciences and related fields</i>	83.3
2331	<i>Social workers</i>	66.7
9999	<i>Other occupations</i>	16.7

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<i>Field of Study:</i>	<i>Other Social Sciences</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

**Bachelors**

11	<i>Managerial, administrative and related occupations</i>	21.4
1137	<i>Sales and advertising management occupations</i>	5.3
1171	<i>Accountants, auditors and other financial officers</i>	5.3
41	<i>Clerical and related occupations</i>	12.2
23	<i>Occupations in social sciences and related fields</i>	11.5
2331	<i>Social workers</i>	3.1
51	<i>Sales occupations</i>	9.9
5135	<i>Sales clerks, commodities, N.E.C.</i>	3.8
61	<i>Service occupations</i>	6.9
27	<i>Teaching and related occupations</i>	6.1
21	<i>Occupations in natural sciences, engineering and mathematics</i>	4.6
31	<i>Occupations in medicine and health</i>	2.3
9998	<i>Not employed</i>	15.3
9999	<i>Other occupations</i>	9.9



<i>Field of Study:</i>	<i>Other Social Sciences</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

**Masters**

23	<i>Occupations in social sciences and related fields</i>	29.4
2311	<i>Economists</i>	11.8
2315	<i>Psychologists</i>	11.8
2331	<i>Social workers</i>	5.9
11	<i>Managerial, administrative and related occupations</i>	23.5
21	<i>Occupations in natural sciences, engineering and mathematics</i>	11.8
27	<i>Teaching and related occupations</i>	11.8
41	<i>Clerical and related occupations</i>	5.9
9998	<i>Not employed</i>	17.6
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i>	<i>Other Social Sciences</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Doctorates**

23	<i>Occupations in social sciences and related fields</i>	33.3
2315	<i>Psychologists</i>	33.3
27	<i>Teaching and related occupations</i>	33.3
2711	<i>University teachers</i>	33.3
9999	<i>Other occupations</i>	33.3

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<i>Field of Study:</i> <i>Veterinary Science</i>		<i>Level:</i> <i>University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>
<b>Bachelors</b>		
31	<i>Occupations in medicine and health</i>	100.0
3115	<i>Veterinarians</i>	100.0
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i>	<i>Other Agriculture and Biology</i>	<i>Level: University</i>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Bachelors**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	14.9
71	<i>Farming, horticultural and animal-husbandry occupations</i>	10.6
11	<i>Managerial, administrative and related occupations</i>	8.5
27	<i>Teaching and related occupations</i>	8.5
31	<i>Occupations in medicine and health</i>	8.5
51	<i>Sales occupations</i>	6.4
9998	<i>Not employed</i>	19.1
9999	<i>Other occupations</i>	23.4

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<i>Field of Study:</i>	<b><i>Other Agriculture and Biology</i></b>	<i>Level:</i> <b><i>University</i></b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Masters**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	40.0
27	<i>Teaching and related occupations</i>	20.0
9998	<i>Not employed</i>	40.0
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i>	<b><i>Other Agriculture and Biology</i></b>	<i>Level:</i> <b><i>University</i></b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Doctorates**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	50.0
27	<i>Teaching and related occupations</i>	50.0
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i>	<b><i>Civil Engineering</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Bachelors**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	75.0
2143	<i>Civil engineers</i>	40.0
9999	<i>Other occupations</i>	25.0

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<i>Field of Study:</i>	<b><i>Civil Engineering</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Masters**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	50.0
2143	<i>Civil engineers</i>	50.0
9999	<i>Other occupations</i>	50.0

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<i>Field of Study:</i>	<b><i>Electrical Engineering</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Bachelors**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	78.6
2144	<i>Electrical engineers</i>	57.1
9999	<i>Other occupations</i>	21.4

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<i>Field of Study:</i>	<b><i>Electrical Engineering</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Masters**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	50.0
2144	<i>Electrical engineers</i>	50.0
9999	<i>Other occupations</i>	50.0

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<i>Field of Study:</i>	<i>Mechanical Engineering</i>	<i>Level: University</i>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Bachelors**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	66.7
2147	<i>Mechanical engineers</i>	23.8
9999	<i>Other occupations</i>	33.3

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<i>Field of Study:</i>	<b><i>Other Applied Sciences</i></b>	<i>Level:</i> <b><i>University</i></b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Bachelors**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	60.9
2141	<i>Architects</i>	8.7
2144	<i>Electrical engineers</i>	8.7
9998	<i>Not employed</i>	10.9
9999	<i>Other occupations</i>	28.3

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<i>Field of Study:</i>	<b><i>Other Applied Sciences</i></b>	<i>Level:</i> <b><i>University</i></b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Masters**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	75.0
2141	<i>Architects</i>	25.0
9999	<i>Other occupations</i>	25.0

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<i>Field of Study:</i>	<i>Dentistry</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Bachelors**

31	<i>Occupations in medicine and health</i>	88.9
3113	<i>Dentists</i>	88.9
9999	<i>Other occupations</i>	11.1

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<i>Field of Study:</i>	<i>Medicine</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Bachelors**

31	<i>Occupations in medicine and health</i>	88.9
3111	<i>Physicians and surgeons</i>	77.8
9999	<i>Other occupations</i>	11.1

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<i>Field of Study:</i>	<i>Medicine</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Masters**

31	<i>Occupations in medicine and health</i>	50.0
3111	<i>Physicians and surgeons</i>	50.0
9999	<i>Other occupations</i>	50.0

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<i>Field of Study:</i>	<i>Nursing</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Bachelors**

31	<i>Occupations in medicine and health</i>	86.2
3131	<i>Nurses, graduate, except supervisors</i>	72.4
9999	<i>Other occupations</i>	13.8

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<i>Field of Study:</i>	<i>Nursing</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Masters**

11	<i>Managerial, administrative and related occupations</i>	100.0
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i>	<b><i>Pharmacy</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Bachelors**

31	<i>Occupations in medicine and health</i>	92.3
3151	<i>Pharmacists</i>	92.3
9999	<i>Other occupations</i>	7.7

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<i>Field of Study:</i>	<i>Rehabilitation Medicine</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Bachelors**

31	<i>Occupations in medicine and health</i>	81.8
3137	<i>Physiotherapists, occupational and other therapists</i>	81.8
9999	<i>Other occupations</i>	18.2

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<i>Field of Study:</i>	<i>Rehabilitation Medicine</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Masters**

31	<i>Occupations in medicine and health</i>	50.0
3137	<i>Physiotherapists, occupational and other therapists</i>	50.0
9999	<i>Other occupations</i>	50.0

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<i>Field of Study:</i>	<i>Other Health</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Bachelors**

31	<i>Occupations in medicine and health</i>	100.0
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i>	<i>Other Health</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

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**Masters**

31	<i>Occupations in medicine and health</i>	66.7
3111	<i>Physicians and surgeons</i>	33.3
11	<i>Managerial, administrative and related occupations</i>	33.3
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i>	<b><i>Geology</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Bachelors**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	62.5
2112	<i>Geologists and related occupations</i>	50.0
9999	<i>Other occupations</i>	37.5

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<i>Field of Study:</i>	<b><i>Geology</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Masters**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	100.0
9999	<i>Other occupations</i>	0.0

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<i>Field of Study:</i>	<b><i>Mathematics</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Bachelors**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	63.2
2183	<i>Systems analysts, computer programmers and related occupations</i>	57.9
11	<i>Managerial, administrative and related occupations</i>	13.2
1171	<i>Accountants, auditors and other financial officers</i>	7.9
9999	<i>Other occupations</i>	23.7

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<i>Field of Study:</i>	<b><i>Mathematics</i></b>	<i>Level:</i>	<b><i>University</i></b>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>	

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**Masters**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	33.3
2183	<i>Systems analysts, computer programmers and related occupations</i>	33.3
9999	<i>Other occupations</i>	66.7

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<i>Field of Study:</i>	<b><i>Other Physical Sciences</i></b>	<i>Level:</i> <b>University</b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Bachelors**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	37.5
9999	<i>Other occupations</i>	62.5

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<i>Field of Study:</i>	<b><i>Other Physical Sciences</i></b>	<i>Level:</i> <b>University</b>
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<i>Occupation of Graduate Two Years After Graduation</i>	<i>Per Cent Distribution</i>
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**Masters**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	50.0
9999	<i>Other occupations</i>	50.0

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<i>Field of Study:</i>	<i>Other Physical Sciences</i>	<i>Level: University</i>
<i>Occupation of Graduate Two Years After Graduation</i>		<i>Per Cent Distribution</i>

**Doctorates**

21	<i>Occupations in natural sciences, engineering and mathematics</i>	100.0
9999	<i>Other occupations</i>	0.0

## Inside Part Two

### Detailed List of Minor Occupational Groups and Unit Groups

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#### **113/114 Other Managers and Administrators**

- 1130** General Managers and Other Senior Officials
  - 1131** Management Occupations, Natural Sciences and Engineering
  - 1132** Management Occupations, Social Sciences and Related Fields
  - 1133** Administrators in Teaching and Related Fields
  - 1134** Administrators in Medicine and Health
  - 1135** Financial Management Occupations
  - 1136** Personnel and Industrial Relations Management Occupations
  - 1137** Sales and Advertising Management Occupations
  - 1141** Purchasing Management Occupations
  - 1142** Services Management Occupations
  - 1143** Production Management Occupations
  - 1145** Management Occupations, Construction Operations
  - 1146** Farm Management Occupations
  - 1147** Management Occupations, Transport and Communications Operations
- 

#### **115/117 Occupations Related to Management and Administration**

- 1171** Accountants, Auditors and Other Financial Officers
  - 1174** Personnel and Related Officers
  - 1175** Purchasing Officers and Buyers, except Wholesale and Retail Trade
  - 1176** Inspectors and Regulatory Officers, Not Elsewhere Classified
- 

#### **211 Occupations in Physical Sciences**

- 2111** Chemists
  - 2112** Geologists
  - 2113** Physicists
  - 2117** Physical Sciences, Technologists and Technicians
- 

#### **213 Occupations in Life Sciences**

- 2131** Agriculturists and Related Scientists
- 2133** Biologists and Related Scientists
- 2135** Life Sciences Technologists and Technicians
- 2139** Occupations in Life Sciences, Not Elsewhere Classified

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**214/215 Architects and Engineers**

- 2141** Architects
- 2142** Chemical Engineers
- 2143** Civil Engineers
- 2144** Electrical Engineers
- 2145** Industrial Engineers
- 2146** Agricultural Engineers (see 2159)
- 2147** Mechanical Engineers
- 2151** Metallurgical/Materials Engineers
- 2153** Mining Engineers
- 2154** Petroleum Engineers
- 2157** Community Planners (see 2159)
- 2159** Other Professional Engineers, includes 2146 Agricultural Engineers, and 2157 Community Planners

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**216 Other Occupations in Architecture and Engineering**

- 2161** Surveyors
- 2163** Draughting Occupations
- 2164** Architectural Technologists and Technicians (see 2165)
- 2165** Engineering Technologists and Technicians, includes 2164 Architectural Technologists and Technicians

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**218 Occupations in Mathematics, Statistics, Systems Analysis and Related Fields**

- 2181** Mathematicians, Statisticians and Actuaries
- 2183** Systems Analysts, Computer Programmers and Related Occupations
- 2189** Occupations in Mathematics, Statistics, Systems Analysis and Related Fields, Not Elsewhere Classified

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**231 Occupations in Social Sciences**

- 2311** Economists
- 2313** Sociologists, Anthropologists and Related Social Scientists
- 2315** Psychologists

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**233 Occupations in Social Work and Related Fields**

- 2331** Social Workers
- 2333** Occupations in Welfare and Community Services



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**234 Occupations in Law and Jurisprudence****2343** Lawyers and Notaries

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**235 Occupations in Library, Museum and Archival Sciences****2351** Librarians, Archivists and Conservators**2353** Technicians in Library, Museum and Archival Sciences

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**239 Other Occupations in Social Sciences and Related Fields****2391** Educational and Vocational Counsellors

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**271 University Teaching and Related Occupations****2711** University Teachers

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**273 Elementary and Secondary School Teaching and Related Occupations****2731** Elementary and Kindergarten Teachers**2733** Secondary School Teachers**2739** Elementary and Secondary School Teaching and Related Occupations, Not Elsewhere Classified

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**279 Other Teaching and Related Occupations****2791** Community College and Vocational School Teachers**2792** Fine Arts Teachers, Not Elsewhere Classified**2795** Teachers of Exceptional Students, Not Elsewhere Classified

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**311 Health Diagnosing and Treating Occupations****3111** Physicians and Surgeons**3113** Dentists**3115** Veterinarians**3117** Osteopaths and Chiropractors**3119** Health Diagnosing and Treating Occupations, Not Elsewhere Classified

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**313 Nursing, Therapy and Related Assisting Occupations****3131** Nurses, Registered, Graduate and Nurses-in-Training

- 
- 3134** Registered Nursing Assistants  
**3136** Audio and Speech Therapists, includes 3137 Physiotherapists, and 3138 Occupational Therapists  
**3137** Physiotherapists (see 3136)  
**3138** Occupational Therapists (see 3136)
- 

**315 Other Occupations in Medicine and Health**

- 3151** Pharmacists  
**3152** Dietitians and Nutritionists  
**3153** Optometrists  
**3154** Dispensing Opticians  
**3155** Radiological Technologists and Technicians  
**3156** Medical Laboratory Technologists and Technicians  
**3157** Denturists, includes 3158 Dental Hygienists/Assistants, and 3161 Dental Laboratory Technicians  
**3158** Dental Hygienists/Assistants (see 3157)  
**3161** Dental Laboratory Technicians (see 3157)
- 

**331 Occupations in Fine and Commercial Art, Photography and Related Fields**

- 3313** Product and Interior Designers  
**3314** Advertising and Illustrating Artists  
**3315** Photographers and Camera Operators
- 

**333 Occupations in Performing and Audio-Visual Arts**

- 3330** Producers and Directors, Performing and Audio-Visual Arts  
**3337** Radio and Television Announcers
- 

**335 Occupations in Writing**

- 3351** Writers and Editors  
**3355** Translators and Interpreters
- 

**337 Occupations in Sports and Recreation**

- 3370** Coaches, Trainers and Inspectors, Sports and Recreation

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**411      Stenographic and Typing Occupations****4111**      Secretaries and Stenographers**4113**      Typists and Clerk-typists

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**413      Bookkeeping, Account-Recording and Related Occupations****4131**      Bookkeepers and Accounting Clerks**4133**      Cashiers and Tellers**4135**      Insurance, Bank and Other Finance Clerks**4137**      Statistical Clerks

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**414      Office Machine and Electronic Data-Processing Equipment Operators****4143**      Electronic Data Processing Equipment Operators

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**415      Material, Recording, Scheduling and Distributing Occupations****4151**      Production Clerks**4153**      Shipping and Receiving Clerks**4155**      Stock Clerks and Related Occupations

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**417      Reception, Information, Mail and Message Distribution Occupations****4171**      Receptionists and Information Clerks

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**419      Other Clerical and Related Occupations****4192**      Claim Adjusters**4197**      General Office Clerks

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**513/514   Sales Occupations, Commodities****5130**      Supervisors: Sales Occupations, Commodities**5131**      Technical Sales Occupations and Related Advisers**5133**      Commercial Travellers**5135**      Sales Clerks and Salespersons, Commodities, Not Elsewhere Classified

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**517      Sales Occupations Services****5170**      Supervisors: Sales Occupations, Services**5171**      Insurance Sales Occupations and Agents

- 
- 5172** Real Estate Sales Occupations  
**5173** Sales Agents and Trades, Securities  
**5174** Advertising Sales Occupations
- 

**611 Protective Service Occupations**

- 6112** Police Officers and Detectives, Government  
**6115** Guards and Related Security Occupations
- 

**612 Food and Beverage Preparation and Related Service Occupations**

- 6120** Supervisors: Food and Beverage Preparation and Related Service  
**6121** Chefs and Cooks  
**6125** Food and Beverage Serving Occupations
- 

**614 Personal Service Occupations**

- 6141** Funeral Directors, Embalmers and Related Occupations  
**6143** Barbers, Hairdressers and Related Occupations
- 

**619 Other Service Occupations**

- 6191** Janitors, Charworkers and Cleaners  
**6198** Occupations in Labouring and Other Elemental Work: Other Services
- 

**711 Farmers**

- 7113** Livestock Farmers, includes 7115 Crop Farmers, and 7119 Farmers, Not Elsewhere Classified  
**7115** Crop Farmers (see 7113)  
**7119** Farmers, Not Elsewhere Classified (see 7113)
- 

**718/719 Other Farming, Horticultural and Animal Husbandry Occupations**

- 7195** Nursery and Related Workers
- 

**731 Fishing, Trapping and Related Occupations**

- 7311** Captains and Other Officers, Fishing Vessels
-

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**751 Forestry and Logging Occupations****7516** Log Inspecting, Grading, Scaling and Related Occupations

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**771 Mining and Quarrying Including Oil and Gas Field Occupations****7711** Rotary Well-drilling and Related Occupations**7713** Rock and Soil Drilling Occupations**7715** Blasting Occupations

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**813 Metal Processing and Related Occupations****8137** Moulding, Coremaking and Metal Casting Occupations

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**831 Metal Machining Occupations****8311** Tool and Die Making Occupations**8313** Machinist and Machine Tool Setting-up Occupations**8316** Inspecting, Testing, Grading and Sampling Occupations: Metal Machining**8319** Metal Machining Occupations, Not Elsewhere Classified

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**833 Metal Shaping and Forming Occupations, Except Machining****8333** Sheet Metal Workers**8335** Welding and Flamecutting Occupations**8336** Inspecting, Testing, Grading and Sampling Occupations: Metal Shaping and Forming, Except Machining**8337** Boilermakers, Platers and Structural Metal Workers

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**851 Fabricating and Assembling Occupations,  
Metal Products, Not Elsewhere Classified****8513** Motor Vehicle Fabricating and Assembling Occupations, Not Elsewhere Classified**8515** Aircraft Fabricating and Assembling Occupations, Not Elsewhere Classified

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**853 Fabricating, Assembling, Installing and Repairing Occupations:  
Electrical, Electronic and Related****8533** Electrical and Related Equipment Installing and Repairing Occupations**8535** Electronic and Related Equipment Installing and Repairing Occupations, Not Elsewhere Classified



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- 8536** Inspecting, Testing, Grading and Sampling Occupations: Fabricating, Assembling, Installing  
**8537** Radio and Television Service Repairers
- 

- 854** **Fabricating, Assembling and Repairing Occupations, Wood Products**  
**8541** Cabinet and Wood Furniture Makers
- 

- 858** **Mechanics and Repairers, Except Electrical**  
**8581** Motor Vehicle Mechanics and Repairers  
**8582** Aircraft Mechanics and Repairers  
**8583** Rail Transport Equipment Mechanics and Repairers  
**8584** Industrial, Farm and Construction Machinery Mechanics and Repairers  
**8585** Business and Commercial Machine Mechanics and Repairers  
**8587** Watch and Clock Repairers  
**8588** Precision Instrument Mechanics and Repairers  
**8589** Other Mechanics and Repairers, Not Elsewhere Classified
- 

- 859** **Other Product Fabricating, Assembling and Repairing Occupations**  
**8591** Jewellery and Silverware Fabricating, Assembling and Repairing Occupations  
**8592** Marine Craft Fabricating, Assembling and Repairing Occupations
- 

- 871** **Excavating, Grading, Paving and Related Occupations**  
**8711** Excavating, Grading and Related Occupations
- 

- 873** **Electrical Power, Lighting and Wire Communications Equipment Erecting, Installing and Repairing Occupations**  
**8731** Electrical Power Line Workers and Related Occupations  
**8733** Construction Electricians and Repairers  
**8735** Wire Communications and Related Equipment Installing and Repairing Occupations  
**8736** Inspecting, Testing, Grading and Sampling Occupations: Electrical Power, Lighting and Wire Communications Equipment Erecting, Installing and Repairing
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**878/879 Other Construction Trades Occupations**

- 8781** Carpenters and Related Occupations
- 8782** Brick and Stone Masons and Tilesetters
- 8783** Concrete Finishing and Related Occupations
- 8784** Plasterers and Related Occupations
- 8785** Painters, Paperhangers and Related Occupations
- 8786** Insulating Occupations, Construction
- 8787** Roofing, Waterproofing and Related Occupations
- 8791** Pipefitting, Plumbing and Related Occupations
- 8793** Structural Metal Erectors
- 8795** Glaziers

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**911 Air Transport Operating Occupations**

- 9111** Air Pilots, Navigators and Flight Engineers

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**913 Railway Transport Operating Occupations**

- 9131** Locomotive Operating Occupations

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**915 Water Transport Operating Occupations**

- 9151** Deck Officers
- 9153** Engineering Officers, Ship

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**917 Motor Transport Operating Occupations**

- 9171** Bus Drivers
- 9175** Truck Drivers

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**951 Printing and Related Occupations**

- 9512** Printing Press Occupations
  - 9515** Photoengraving and Related Occupations
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**953      Stationary Engine and Utilities Equipment  
Operating and Related Occupations**

**9531**      Power Station Operators

**9539**      Stationary Engine and Utilities Equipment Operating and Related Occupations, Not  
Elsewhere Classified

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**955      Electronic and Related Communications Equipment  
Operating Occupations, Not Elsewhere Classified**

**9551**      Radio and Television Broadcasting Equipment Operators

**9555**      Sound and Video Recording and Reproduction Equipment Operators

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### General Managers and Other Senior Officials

Examples: General Sales Manager  
 Managing Director  
 Program Manager  
 Executive Director

Average salaries, full-time employed two years after graduation (1984):

Community college: \$27,100                      University: \$33,500

Employment trends (000s) 1985: 83.2                      1992: 93.8                      Change: 10.6

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 17.6

Total requirements (000s):                      28.2

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 9%	40%	Under 25 years: 2%	25%
Males: 91%	60%	Over 54 years: 21%	12%

Employment is expected to grow at about an average rate based on the outlook in various Service sectors where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to changing economic conditions.

There is increasing pressure on managers to have more than the traditional skills. More emphasis is being placed on sales and marketing functions to increase the organization's effectiveness.

At the 1981 Census, males were predominant in this group. A relatively large proportion was also older than 54, implying that the increases in labour demand owing to age-retirement may be great. The small percentage of young people in the group reflects the likelihood that people move into these occupations later in their careers, often from other professional and technical specialties.

**Management Occupations, Natural Sciences and Engineering**

Examples: Data Processing and Systems Analysis Manager  
Geochemical Manager  
Geological Manager  
Mathematical Services Manager

Employment trends (000s) 1985: 11.6		1992: 13.1	Change: 1.5	
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.4	
Total requirements (000s):				2.9
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	6%	40%	Under 25 years:	2%
Males:	94%	60%	Over 54 years:	15%
				25%
				12%

Employment is expected to grow at an average rate, based on the outlook in the Business Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

The increasing importance being placed on science and engineering in our society will create concomitant increases in the demand for managers with technical expertise.

At the 1981 Census, males were predominant in this occupational group. Furthermore, a relatively high percentage of the group was older than 54, implying that there may be large increases in labour demand because of age-retirement. The small proportion of young people in the occupation reflects the likelihood that people move into these occupations later in their careers, often from other professional and technical specialties.

The geographical distribution of this group is also a noteworthy factor: over half (54.4%) were located in Ontario at the 1981 Census.

**Management Occupations, Social Sciences and Related Fields**

Examples: Chief Librarian  
 Welfare Agency Official  
 Community Centre Director

Employment trends (000s) 1985: 7.8		1992: 9.0	Change: 1.2	
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.6	
			Total requirements (000s):	2.8
Sex composition (1981)		All occ.	Age composition (1981)	All occ.
Females:	48%	40%	Under 25 years:	6% 25%
Males:	52%	60%	Over 54 years:	14% 12%

Employment is expected to grow at about an average rate, based on the outlook in the Health/Welfare and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, the occupation may not be particularly sensitive to changing economic conditions. These occupations, however, are somewhat sensitive to government spending policies.

At the 1981 Census, females and males were almost evenly distributed in this occupational group. The proportion older than 54 was about average, implying that increases in labour demand due to age-retirement may be moderate. The low representation of young people in the group reflects the likelihood that people usually move into these occupations later in their careers, often from other professional and technical specialties.

### Administrators in Teaching and Related Fields

Examples: Principal  
 Proprietor, Business College  
 Registrar  
 University Department Head  
 Educational Director

Employment trends (000s) 1985: 34.6	1992: 36.4	Change: 1.8
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 5.1
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Total requirements (000s):	6.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 24%	40%	Under 25 years: 2%	25%
Males: 76%	60%	Over 54 years: 12%	12%

Employment is expected to grow at a less-than-average rate, based on the outlook in the Education Services sector where these occupations are largely concentrated. In line with the traditional employment patterns of this sector, these occupations may be particularly sensitive to changing demographic conditions.

Keen competition for these administrative positions will come from secondary school teachers who have become surplus because of declining enrolment in their classrooms. The number of administrators in this group is directly related to student enrolment and teaching positions.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54. This indicates that increases in labour demand due to age-retirement may be moderate. The small proportion of young people in this group reflects the traditional pattern that people move into these administrative positions later in their careers.

For further information, contact:

Canadian School Trustees' Association  
 1140 Morrison Drive, Suite 220  
 Ottawa, Ontario  
 K2H 8S9

(613) 829-9108

**Administrators in Medicine and Health**

Examples: Clinical Director  
 Director of Rehabilitation  
 First Aid Director  
 Nutrition Director  
 Nursing Director  
 Hospital Administrator

Employment trends (000s) 1985: 12.1	1992: 14.2	Change: 2.1
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 2.7
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Total requirements (000s):	4.8
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 52%	40%	Under 25 years: 2%	25%
Males: 48%	60%	Over 54 years: 18%	12%

Employment is expected to grow at the average rate, based on the outlook in the Health/Welfare and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be particularly sensitive to future government expenditure policies.

Developments in new health-care delivery systems are resulting in a shift towards less-acute facilities such as nursing homes and chronic institutions. There is also a move towards new programs such as day surgery, home care and day care. These trends may increase the demand for personnel to administer these services.

Best prospects lie in institutions other than acute-care hospitals: rehabilitation homes, chronic-care institutions, community health and social centres. Demand will also be strong in remote areas where it is generally difficult to attract and keep qualified and experienced people.

Many of these occupations develop as a result of career and occupational mobility. Academic programs in health administration provide one way of entering this occupation but previous experience in the health profession is often required prior to these programs.



At the 1981 Census, females and males were almost evenly distributed in this occupational group. A relatively large proportion was older than 54, foreshadowing large increases in labour demand owing to age-retirement. The low number of young people in the occupation reflects the likelihood that people generally move into these occupations later in their career.

For further information, contact:

Canadian Hospital Association  
Research Department  
17 York St.  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005

The Canadian Dietetic Association  
480 University Avenue  
Suite 604  
Toronto, Ontario  
M5G 1V2  
(416) 596-0857

Canadian Nurses Association  
50 The Driveway  
Ottawa, Ontario  
K2P 1E2  
(613) 237-2133



## Financial Management Occupations

Examples: Bank Director  
Branch Manager  
Treasurer  
Loan and Credit Manager  
Controller  
Vice-President Finance

Average salaries, full-time employed two years after graduation (1984):

Community college: \$19,200                      University: \$29,500

Employment trends (000s) 1985: 61.0                      1992: 69.2                      Change: 8.2

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 7.5

Total requirements (000s):                      15.7

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 23%	40%	Under 25 years: 6%	25%
Males: 77%	60%	Over 54 years: 9%	12%

Employment is expected to grow at an average rate based on the outlook in the Finance sector where these occupations are concentrated. Based on past employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

The expansion of corporate financial and auditing controls may improve the outlook for financial managers. As new technologies take over routine accounting functions, the financial manager will most likely assist in the development of computer software applications.

At the 1981 Census, males were predominant in this occupational group. The distribution of females has since increased and in all probability the trend will continue. In addition, a below-average proportion of the group was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

The Society of Management Accountants  
154 Main Street, E.  
Hamilton, Ontario  
L8N 3C3  
(416) 525-4100

Canadian Bankers Association  
P.O. Box 348  
2 First Canadian Place  
Toronto, Ontario  
M5X 1T1  
(416) 362-6092 Ext. 311

or Appropriate Provincial C.A. Institute

## 1136

**Personnel and Industrial Relations Management Occupations**

Examples: Employment Manager  
 Labour Relations Director  
 Manager of Personnel Department

Employment trends (000s) 1985: 25.6	1992: 29.2	Change: 3.6
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 3.3
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Total requirements (000s):	6.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 28%	40%	Under 25 years: 6%	25%
Males: 72%	60%	Over 54 years: 12%	12%

Employment is expected to grow at an average rate based on the outlook in various Service sectors, Public Administration, and Trade sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

The demand for personnel managers may be affected by the need to negotiate agreements calling for employee benefits in lieu of wage increases, job-sharing arrangements in the face of technological advancements, and productivity enhancement to overcome rising costs.

At the 1981 Census, males represented a 7 to 3 majority over females in this occupational group. An average proportion of this group was older than 54, so that increases in labour demand owing to age-retirement may be moderate.

### Sales and Advertising Management Occupations

Examples: Advertising Executive  
 Clothing Store Manager  
 District Sales Manager  
 Retail Department Manager  
 Marketing Manager  
 Sales Director  
 Public Relations Manager

Average salaries, full-time employed two years after graduation (1984):

Community college: \$15,600

University: \$22,900

Employment trends (000s) 1985: 180.4                      992: 196.9                      Change: 16.5

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 23.6

Total requirements (000s):                      40.1

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 21%	40%	Under 25 years: 10%	25%
Males: 79%	60%	Over 54 years: 12%	12%

Employment is expected to grow at an average rate based on the outlook in the Trade sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

Prospects appear brighter for those with knowledge of automated inventory control and information systems. Also, in a highly competitive, tight economy, emphasis is being placed on the ability to successfully market company goods.

At the 1981 Census, males were predominant in this occupational group. Also, an average proportion of the group was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

**Purchasing Management Occupations**

Employment trends (000s) 1985: 12.4	1992: 13.6	Change: 1.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 2.2
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Total requirements (000s):	3.4
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 14%	40%	Under 25 years: 11%	25%
Males: 86%	60%	Over 54 years: 19%	12%

Employment is expected to grow at an average rate based on the outlook in the Trade sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

This occupational group is involved in buying and negotiating and operations. According to an association survey, technological change is having a positive effect on this group as the demand for sophisticated information is increasing. As computer technology changes tasks, emphasis will be on negotiating skills and the supplier performance aspects of purchasing.

At the 1981 Census, males were predominant in this occupational group. Further, a relatively large proportion of the group was older than 54, implying that there may be large increases in labour demand owing to age-retirement.

For further information, contact:

Purchasing Management Association of Canada  
 2 Carlton Street, Suite 815  
 Toronto, Ontario  
 M5B 1J3  
 (416) 977-7111

**Services Management Occupations**

Examples: Hotel Manager  
 Motel Manager  
 Laundry and Dry Cleaning Manager  
 Janitorial Services Manager  
 Restaurant Manager

Employment trends (000s) 1985: 49.1	1992: 60.4	Change: 11.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 9.8
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Total requirements (000s):	21.1
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Sex composition (1981)		All occ.		Age composition (1981)		All occ.	
Females:	30%		40%	Under 25 years:	12%		25%
Males:	70%		60%	Over 54 years:	14%		12%

Employment is expected to grow faster than an average rate, based on the outlook in the Personal/Hospitality Services sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

The growth of the tourism industry may expand opportunities for managers of hospitality establishments in the short term as more Canadians opt to spend their vacations in Canada, and U.S. visitors take advantage of favourable currency exchange rates.

### Production Management Occupations

Examples: Dairy Manager  
Field Director  
Operation Manager  
Plant Superintendent  
Refinery Superintendent

Average salaries, full-time employed two years after graduation (1984):  
Community college: \$18,100                      University: \$25,200

Employment trends (000s) 1985: 45.8                      1992: 50.9                      Change: 5.1

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 6.2

Total requirements (000s):                      11.3

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 8%	40%	Under 25 years: 5%	25%
Males: 92%	60%	Over 54 years: 14%	12%

Employment is expected to grow at an average rate based on the outlook in Trade and various Manufacturing sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. Prospects are brightest for those with knowledge of CAD/CAM and robotics.

This occupational group is involved in preparatory and follow-up work relating to the movement and transformation of products during manufacture. These managers are closely linked to industrial production and it's an area with rapid technological changes. Management is no longer involved in linear repetitive computer processing but has access to a sophisticated network with a range of information channels to assist in problem analysis and the decision-making process.

At the 1981 Census, males were a 9 to 1 majority over females in this occupational group. In addition, an about-average proportion of the group was older than 54, so that increases in labour demand owing to age-retirement may be moderate. The small percentage of young people in the occupation reflects the likelihood that people move into these occupations later in their careers, often from other professional and technical specialties.

These occupations are facing labour market conditions that are among the most favourable as indicated by its lower-than-average U.I. claimant rate and higher-than-average hard-to-fill vacancy rate.



**Management Occupations, Construction Operations**

Employment trends (000s) 1985: 20.9	1992: 22.3	Change: 1.4
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 2.9
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Total requirements (000s):	4.3
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 2%	40%	Under 25 years: 3%	25%
Males: 98%	60%	Over 54 years: 15%	12%

Employment is expected to grow at a less-than-average rate, based on the outlook in the Construction sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. The opportunities for construction managers and levels of construction activity are linked to the growth in the economy.

At the 1981 Census, males held a greater than 9 to 1 majority over females in this occupational group. Further, a relatively large proportion of the group was older than 54, indicating there will be a large increase in labour demand owing to age-retirement. The low number of young people in the occupation reflects the likelihood that people move into these occupations later in their careers, often from other professional and technical specialties.



### Farm Management Occupations

Employment trends (000s) 1985: 28.9	1992: 32.9	Change: 4.0
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 7.0
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Total requirements (000s):	11.0
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 15%	40%	Under 25 years: 18%	25%
Males: 85%	60%	Over 54 years: 20%	12%

Employment is expected to grow at an average rate, based on the outlook in the Agriculture sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

The growing number of larger farms (i.e., agri-businesses) increases the opportunities for farm managers, especially those who are familiar with new farm management computer systems to regulate feeding and planting. However, farm financial conditions and changes in farm structure could limit employment growth. The outlook for managers with a wide range of scientific, business and personnel management skills is promising but opportunities are limited to the larger, more profitable farms.

At the 1981 Census, males were predominant in this occupational group. A relatively high percentage of the group was older than 54, implying that the increases in labour demand owing to age-retirement may be high.

For further information, contact:

Agriculture Canada  
 Farm Input Section  
 Sir John Carling Building  
 930 Carling Avenue  
 Ottawa, Ontario  
 K1A 0C5  
 (613) 995-9554

**Management Occupations, Transport and Communications Operations**

Examples: Airline Manager  
 Traffic Manager  
 Flight Director  
 Port Engineer

Employment trends (000s) 1985: 15.7	1992: 18.0	Change: 2.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 2.2
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Total requirements (000s):	4.5
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 13%	40%	Under 25 years: 3%	25%
Males: 87%	60%	Over 54 years: 15%	12%

Employment is expected to grow at an average rate, based on the outlook in Miscellaneous Transport/Storage, Telephone and Telegraph sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

At the 1981 Census, males comprised the large majority in this occupational group. A relatively large proportion of the group was older than 54, indicating that increases in labour demand owing to age-retirement may be high. The low representation of young people in the occupation reflects the likelihood that people move into these occupations later in their careers, often from other professional and technical specialties.

1171

**Accountants, Auditors and Other Financial Officers**

Examples: Chartered Accountant  
 Cost Accountant  
 Industrial Accountant  
 Tax Analyst  
 Public Accountant  
 Loan Adviser  
 Liquidator  
 Mortgage Consultant  
 Insurance Underwriter

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Average salaries, full-time employed two years after graduation (1984):

Community college: \$18,000

University: \$24,700

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Employment trends (000s) 1985: 149.6

1992: 170.2

Change: 20.6

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Estimated attrition due to labour force withdrawals (000s)

1985-92: 21.7

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Total requirements (000s):

42.3

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Sex composition (1981)

Females: 31%

Males: 69%

All occ.

40%

60%

Age composition (1981)

Under 25 years: 6%

Over 54 years: 9%

All occ.

25%

12%

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Employment is expected to grow at an average rate, based on the outlook in Finance, Business Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

The computer has enhanced the ability of accountants to conduct regular accounting functions and to make budget simulations. Also, the emergence on the market of computer packages able to calculate personal income taxes may directly affect the employment of tax accountants.

However, as business transactions increase and become more complex, accountants will likely be needed to provide financial information, and advice on tax structures. Opportunities should be favourable for tax accountants. These new technologies will change the skills required by accountants from basic recording of information to being able to provide qualitative data as organizations seek to improve production standards and achieve greatest return on investment.

At the 1981 Census, males represented a 7 to 3 majority over females in this occupational group. In addition, a below-average proportion was older than 54, so that the increases in labour demand due to age-retirement may not be great.

For further information, contact:

Society of Management Accountants  
154 Main Street E.  
Hamilton, Ontario  
L8N 3G3  
(416) 525-4100

Canadian Bankers Association  
P.O. Box 348  
2 First Canadian Place  
Toronto, Ontario  
M5X 1E1  
(416) 362-6092 Ext. 311

or Appropriate Provincial C.A. Institute

### Personnel and Related Officers

Examples: Employment Counsellor  
 Staff Training Officer  
 Labour Relations Representative  
 Job and Wage Analyst

Employment trends (000s) 1985: 31.5		1992: 36.0	Change: 4.5
Estimated attrition due to labour force withdrawals (000s)			1985-92: 4.9
Total requirements (000s):			9.4
Sex composition (1981)		Age composition (1981)	
Females:	47%	All occ.	40%
Males:	53%	Under 25 years:	11%
		Over 54 years:	11%
		All occ.	25%
			12%

Employment is expected to grow at an average rate, based on the outlook in Public Administration, various Durable Manufacturing sectors, and Education sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

Prospects appear better for those with knowledge of automated pay and attendance systems. Also in demand will be personnel officers who have the expertise to help administer the growing number of productivity schemes and human resource plans, as well as to consider the introduction of technological innovations in collective bargaining agreements.

At the 1981 Census, females and males were almost evenly distributed in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

**Purchasing Officers and Buyers, except Wholesale and Retail Trade**

Examples: Procurement Officer  
Television-time Buyer

Employment trends (000s) 1985: 15.6		992: 17.5		Change: 1.9
Estimated attrition due to labour force withdrawals (000s)				1985-92: 2.6
Total requirements (000s):				4.5
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	22%	40%	Under 25 years:	8%
Males:	78%	60%	Over 54 years:	16%
				25%
				12%

Employment is expected to grow at an average rate, based on the outlook in Public Administration and various Durable Manufacturing sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In an increasingly cost-conscious economy, buyers will likely be in greater demand in the future.

At the 1981 Census, males were predominant in this occupational group. A relatively large proportion of this group was older than 54, implying that increases in labour demand owing to age-retirement will likely be high.

**Inspectors and Regulatory Officers, Not Elsewhere Classified**

Examples: Insurance Inspector  
 Ship Inspector  
 Tariff Inspector  
 Transportation Inspector

Employment trends (000s) 1985: 6.4	1992: 7.3	Change: 0.9
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.0
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Total requirements (000s):	1.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 14%	40%	Under 25 years: 10%	25%
Males: 86%	60%	Over 54 years: 17%	12%

Employment is expected to grow at an average rate, based on the outlook in the Health/Welfare, Finance, and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

At the 1981 Census, males dominated this occupational group. A relatively large proportion of the group was older than 54, implying that increases in labour demand owing to age-retirement may be high.



**Chemists**

Examples: Analytical Chemist  
 Physical Chemist  
 Inorganic Chemist  
 Organic Chemist  
 Polymer Chemist  
 Industrial Chemical Chemist  
 Petroleum Chemist  
 Agricultural Chemist  
 Food Chemist  
 Nutritional Chemist

Employment trends (000s) 1985: 8.8	1992: 9.8	Change: 1.0
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.0
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Total requirements (000s):	2.0
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 20%	40%	Under 25 years: 9%	25%
Males: 80%	60%	Over 54 years: 10%	12%

Employment is expected to grow at an average rate, based on the outlook in the Chemical Products, Public Administration, and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations will be sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The majority of chemists are employed in research and development of new products and processes, in analytical and control work for production, in technical service for customers, in teaching and research in universities and colleges and in government laboratories and provincial research organizations. Quality control is another area of considerable employment for this occupation group.

At the 1981 Census, males were the majority by 8 to 2 over females in this occupational group. An average proportion of this group was older than 54, so that increases in labour demand owing to age-retirement may be moderate.

The geographical distribution for this occupation is also a factor to be noted. Over half (50.3%) of its workforce was located in Ontario at the time of the 1981 Census.

For further information, contact:

Chemical Institute of Canada  
151 Slater Street, Suite 906  
Ottawa, Ontario  
K1P 5H4  
(613) 233-5623

Canadian Manufacturers of Chemical Specialties Association  
116 Albert Street, Suite 710  
Ottawa, Ontario  
K1P 5G3  
(613) 232-6616

Geologists

Examples: Geochemist  
Geophysicist  
Hydrologist  
Oceanographer  
Mineralogist  
Seismologist

Average salaries, full-time employed two years after graduation (1984):				
Community college: N/A		University: \$31,200		
Employment trends (000s) 1985: 7.3		1992: 8.2		Change: 0.9
Estimated attrition due to labour force withdrawals (000s)				1985-92: 0.7
Total requirements (000s):				1.6
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	10%	40%	Under 25 years:	14%
Males:	90%	60%	Over 54 years:	8%
				25%
				12%

Employment is expected to grow at an average rate, based on the outlook in Petroleum/Gas Wells/Incidental Mining Services, Business Services, and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations are particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. While openings may be created by the ongoing search for new sources of energy, the advent of efficient 'electronic prospectors' and sophisticated aerial detecting devices may reduce the relative need for geologists in the economy. Deep sea exploration and research should continue to support the demand for oceanographers.

At the 1981 Census, males were a 9 to 1 majority over females in this occupational group. In addition, a below-average proportion of this group was older than 54, implying that increases in labour demand owing to age-retirement will not be large.

## Physicists

Examples: Acoustician  
Experimental Physicist  
Laser Scientist  
Nuclear Physicist  
Biophysicist

Employment trends (000s) 1985: 1.3	1992: 1.5	Change: 0.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.1
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Total requirements (000s):	0.3
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 5%	40%	Under 25 years: 5%	25%
Males: 95%	60%	Over 54 years: 11%	12%

Employment is expected to grow at an average rate, based on the outlook in the Public Administration, Business Services and Education Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The widening use of lasers in medicine and telecommunications, the strong interest in discovering new, more durable materials, the pursuit of more aerodynamically sound vehicles and the growing use of nuclear energy and nuclear medicine could translate into demand for this group of scientists.

At the 1981 Census, males were predominant in this occupational group. An average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

The geographical distribution of this occupation is also a noteworthy factor: over half (54.1%) of its workforce was located in Ontario at the time of the 1981 Census.

**Physical Sciences, Technologists and Technicians**

Examples: Biochemistry Technician  
Metallurgical Tester  
X-Ray Technician

Average salaries, full-time employed two years after graduation (1984):

Community college: \$20,600                      University: \$23,900

Employment trends (000s) 1985: 19.2                      1992: 21.5                      Change: 2.3

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 1.9

Total requirements (000s):                      4.2

Sex composition (1981)		All occ.	Age composition (1981)		All occ.
Females:	24%	40%	Under 25 years:	33%	25%
Males:	76%	60%	Over 54 years:	7%	12%

Employment is expected to grow at an average rate, based on the outlook in the Public Administration, and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large. The large proportion of young people in the occupation reflects the likelihood that this is a relatively new occupation which offers entry-level employment for university and college graduates.

**Agriculturists and Related Scientists**

Examples: Agricultural Adviser  
 Horticulturist  
 Dairy Scientist  
 Plant Breeder

Employment trends (000s) 1985: 6.7		1992: 7.4	Change: 0.7
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.9
Total requirements (000s):			1.6
Sex composition (1981)		Age composition (1981)	
Females:	12%	Under 25 years:	9%
Males:	88%	Over 54 years:	15%
All occ.		All occ.	
40%		25%	
60%		12%	

Employment is expected to grow at the average rate, based on the outlook in the Public Administration, Forestry and Agriculture sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may not be particularly sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Those involved in biotechnological research and its application to the agricultural sector should enjoy good prospects. Also, openings may exist in companies that carry on business transactions with farmers, such as banks and equipment manufacturers.

At the 1981 Census, males were predominant in this occupational group. A relatively large proportion of this group was older than 54, implying that the increases in labour demand due to age-retirement may be large.

For further information, contact:

Agricultural Institute  
 151 Slater Street, Suite 907  
 Ottawa, Ontario  
 K1P 5H4  
 (613) 232-9459



Biologists and Related Scientists

Examples: Anatomist  
Botanist  
Cytologist  
Immunologist  
Virologist

Employment trends (000s)	1985: 7.1	1992: 8.0	Change: 0.9
Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.8		
Total requirements (000s):			1.7

Sex composition (1981)		Age composition (1981)	
Females:	31%	Under 25 years:	12%
Males:	69%	Over 54 years:	6%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration, Business Services, and Education Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Jobs will exist for biologists doing research into new drugs, biotechnology, environmental protection and new plant strains. Biotechnological research is one area of employment for biologists in industry and federal and provincial laboratories. The National Research Council is the largest employer of biotechnologists and defines the research activities as: ‘the application of science and engineering to the direct or indirect use of cells from plants or animals or of micro-organisms, in their natural or modified forms, to the production of goods or the provision of services’. Most researchers have either their masters or doctoral degrees. Based on the Task Force on Human Resources for Biotechnology, there is a shift to interdisciplinary programs combining systems engineering with microbiology and other scientific specialties.

The shortage of adequately trained biotechnologists has forced recruitment from abroad. This process will likely continue but with some difficulty as global demand increases for these scientists.

At the 1981 Census, males represented a 7 to 3 majority in this occupational group. A relatively small proportion of this group was older than 54, implying that increases in labour demand owing to age-retirement may not be large.



# 2135

## Life Sciences Technologists and Technicians

Examples: Agricultural Technician  
Bacteriology Technician  
Seed Analyst  
Soil Technologist  
Forest Technologist  
Forest Technician

Average salaries, full-time employed two years after graduation (1984):

Community college: \$18,600

University: \$22,500

Employment trends (000s) 1985: 9.9	1992: 11.0	Change: 1.1
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.9
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Total requirements (000s):	2.0
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 35%	40%	Under 25 years: 39%	25%
Males: 65%	60%	Over 54 years: 4%	12%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration, and Forestry, and Education Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Prospects appear to be bright in the area of quality control in agriculture and fisheries.

At the 1981 Census, males were the majority in this occupational group. A relatively small percentage of the group was older than 54, implying that increases in labour demand owing to age-retirement may not be large. The large proportion of young people is an indication that these occupations offer entry level employment for university and college graduates.

These occupations are currently facing unfavourable labour market conditions as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

For further information, contact:

Applied Science Technologists and Technicians of  
British Columbia  
200 Discovery Park  
3700 Gilmore Way  
Burnaby, B.C.  
V5G 4M1  
(604) 433-0548

### Occupations in Life Sciences, Not Elsewhere Classified

Examples: Ecologist  
Forest Agrologist  
Forest Pathologist  
Naturalist

Employment trends (000s) 1985: 3.0		1992: 3.2		Change: 0.2
Estimated attrition due to labour force withdrawals (000s)				1985-92: 0.3
Total requirements (000s):				0.5
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	20%	40%	Under 25 years:	29%
Males:	80%	60%	Over 54 years:	6%
				25%
				12%

Employment is expected to grow less than the average rate, based on the outlook in the Forestry and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Reforestation efforts could spur job opportunities in this occupation.

At the 1981 Census, males represented an 8 to 2 majority in this occupational group. A relatively small proportion of the group was older than 54, implying that increases in labour demand owing to age-retirement may not be large. The high percentage of young people is an indication that these occupations offer entry-level employment to university and college graduates.

For further information, contact:

Applied Science Technologists and Technicians of  
British Columbia  
200 Discovery Park  
3700 Gilmore Way  
Burnaby, B.C.  
V5G 4M1  
(604) 433-0548

## Architects

Examples: Building Architect  
Landscape Architect  
Marine Architect  
Naval Architect

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$21,200

Employment trends (000s) 1985: 7.6

1992: 8.9

Change: 1.3

Estimated attrition due to labour force withdrawals (000s)

1985-92: 1.0

Total requirements (000s):

2.3

### Sex composition (1981)

All occ.

### Age composition (1981)

All occ.

Females: 8%

8%

40%

Under 25 years:

4%

25%

Males:

92%

60%

Over 54 years:

12%

12%

Employment is expected to grow at the average rate, based on the outlook in the Business Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

There are a number of specialties in this occupational group. Among these are: building architects engaged in the design of residential and commercial structures; landscape architects who design private or public land service for recreation use; and marine/naval architects involved in shipbuilding, ship repair and offshore-related development equipment. As renovation activity becomes increasingly popular, architects' chances of employment may be best with smaller companies. Job prospects are more promising for those familiar with computer-aided design. Employment opportunities for naval/marine architects are few as the current demand for construction of new vessels is fairly flat.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand due to age-retirement may be moderate.

## Chemical Engineers

Examples: Process Technology  
Design and Development  
Environmental Engineering  
Heat Transfer/Energy Conversion

Employment trends (000s) 1985: 5.5	1992: 6.1	Change: 0.6
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 6%	40%	Under 25 years: 14%	25%
Males: 94%	60%	Over 54 years: 10%	12%

### Engineering Bachelor's Degrees Conferred (1984)

Females: 20%  
Males: 80%

Employment prospects in this group will depend on the outlook in the Industrial Chemicals, Business Services, Petroleum and Coal Products, Petroleum/Gas Wells/Incidental Mining Services and Chemical Products sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Among the factors that may increase demand is the expansion of chemical industries, the growing complexities of chemical processes that require new plant and equipment, the development of plastics and synthetic fibers required in consumer goods, and the expanding field of biotechnology.

During the 1985-1992 time period, the major demand for new engineering graduates will be to replace those in this group who voluntarily move into managerial or related occupations. The annual attrition rate of such withdrawals is estimated at about 10 per cent.

At the 1981 Census, this occupational group's workforce was concentrated in Ontario (47 per cent); Alberta (24 per cent); and, Quebec (15 per cent) and males were predominant. The proportion of females (6 per cent) reported in the 1981 Census is increasing. In this regard, a recent survey by the Canadian Council of Professional Engineers indicated that about 20 per cent of those conferred with engineering bachelor's degrees in 1984 were females.

In 1984, chemical engineers constituted about 11 per cent of the total number of university engineering graduates. It is expected that this particular specialty will experience a slightly faster-than-average employment growth for recent graduates or experienced engineers over the 1985-1992 time period.

For further information, contact:

Canadian Engineering Manpower Council  
401-116 Albert Street  
Ottawa, Ontario  
K1P 5G3  
(613) 232-2474

## 2143

**Civil Engineers**

Examples: Structural Design  
 Construction  
 Transportation  
 Municipal  
 Hydrology

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$29,000

Employment trends (000s) 1985: 29.2		1992: 33.3	Change: 4.1
Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 3%	40%	Under 25 years: 6%	25%
Males: 97%	60%	Over 54 years: 11%	12%

**Engineering Bachelor's Degrees Conferred (1984)**

Females: 10%

Males: 90%

Employment is expected to grow at the average rate, based on the outlook in the Business Services, Public Administration and Construction sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The prospects for this group are linked to construction activity that in turn is determined by economic conditions. A growing population that may require the design of new suburbs and construction of transportation systems, as well as the growth of export markets for consulting services will be factors determining demand for this occupation group.

During the 1985-1992 period, the major requirement for new engineering graduates will be to replace those in this occupational group who voluntarily move into managerial or related occupations. The annual attrition rate of such withdrawals is estimated at about six per cent.

At the 1981 Census, the three largest provincial concentrations of this occupational group's workforce were in Ontario (35 per cent); Alberta (18 per cent); and Quebec (17 per cent) and males were predominant. The proportion of females (3 per cent) reported in the 1981 Census is increasing. A recent survey by the Canadian Council of Professional Engineers indicated that about 10 per cent of those conferred with engineering bachelor's degrees in 1984 were females.

In 1984, civil engineers made up about 16 per cent of all university engineering graduates. It is expected that this specialty will experience a balanced labour market situation for both recent graduates and experienced engineers over the 1985-1992 period.

For further information, contact:

Canadian Engineering Manpower Council  
 401-116 Albert Street  
 Ottawa, Ontario  
 K1P 5G3  
 (613) 232-2474



**Electrical Engineers**

Examples: Electronics  
 Control Systems  
 Power and Distribution  
 Computers  
 Communication

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$31,000

Employment trends (000s) 1985: 26.0                      1992: 29.5                      Change: 3.5

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 3%	40%	Under 25 years: 6%	25%
Males: 97%	60%	Over 54 years: 11%	12%

**Engineering Bachelor's Degrees Conferred (1984)**

Females: 5%

Males: 95%

Employment is expected to grow at the average rate, based on the outlook in Electric Power, Business Services and Telephone and Telegraph sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The growing demand for microcomputer and telecommunication innovations could place those in this occupation group in an advantageous position.

During the 1985-1992 period, the major requirement for new engineering graduates will be to replace those in this occupational group who voluntarily move into managerial or related occupations. The annual attrition rate of such withdrawals is estimated at about 10 per cent.

At the 1981 Census, the three largest provincial concentrations of this group's workforce were in Ontario (49 per cent); Quebec (18 per cent); and British Columbia (10 per cent) respectively, and males were predominant. The proportion of females (three per cent) reported in the 1981 Census is increasing. A recent survey by the Canadian Council of Professional Engineers indicated that about five per cent of those receiving engineering bachelor's degrees in 1984 were females.

Despite overall high levels of unemployment currently affecting the Canadian economy, this occupation is facing labour market conditions that are among the most favorable as indicated by its lower-than-average U.I. claimant rate and higher than average hard-to-fill vacancy rate.

In 1984, electrical engineers represented about 25 per cent of all university engineering graduates. It is expected that this specialty will experience a strong demand for electronics engineers, primarily due to technological change. Also, the demand for electrical power engineers will be strongly influenced by the pace of development in the construction of new generating projects over the 1985-1992 period.

For further information, contact:

Canadian Engineering Manpower Council  
401-116 Albert Street  
Ottawa, Ontario  
K1P 5G3  
(613) 232-2474



**Industrial Engineers**

Examples: Manufacturing  
 Cost Economics  
 Plant Layout  
 Quality Assurance  
 Systems

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$27,700

Employment trends (000s) 1985: 15.9                      1992: 17.8                      Change: 1.9

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 6%	40%	Under 25 years: 5%	25%
Males: 94%	60%	Over 54 years: 9%	12%

**Engineering Bachelor's Degrees Conferred (1984)**

Females: 13%

Males: 87%

Employment prospects in this group will depend on the outlook in Business Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions.

In the 1970s, occupations in this group experienced an increase in their share of the workforce as a result of changes in technology and/or work organization. The increasing complexity of business operations, along with the growing popularity of automation, contributes to the bright prospects for industrial engineers. Also, the need for efficient organization of tasks may lead to good job opportunities for organization analysts.

During the 1985-1992 period, the major requirement for new engineering graduates will be to replace those in this occupational group who voluntarily move into managerial or related occupations. The annual attrition rate of such withdrawals is estimated at about eight per cent.

At the 1981 Census, the three largest provincial concentrations of this group's workforce were in Ontario (55 per cent); Quebec (23 per cent); and Alberta (eight per cent) and males were predominant. The proportion of females (six per cent) reported in the 1981 Census is increasing. A recent survey by the Canadian Council of Professional Engineers indicated that about 13 per cent of those conferred with engineering bachelor's degrees in 1984 were females.

In 1984, industrial engineers constituted about three per cent of all university engineering graduates. It is expected that this specialty will experience a balanced labour market situation for both recent graduates and experienced engineers over the 1985-1992 period.

For further information, contact:

Canadian Engineering Manpower Council  
401-116 Albert Street  
Ottawa, Ontario  
K1P 5G3  
(613) 232-2474

## Mechanical Engineers

Examples: Plant and Machine Design  
Heat Transfer/Energy Conversion/Thermodynamics  
Automation

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A                      University: \$27,200

Employment trends (000s) 1985: 18.1                      1992: 20.3                      Change: 2.2

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 2%	40%	Under 25 years: 7%	25%
Males: 98%	60%	Over 54 years: 14%	12%

Engineering Bachelor's Degrees Conferred (1984)

Females: 6%  
Males: 94%

Employment is expected to grow at the average rate, based on the outlook in a wide range of sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Mechanical engineers will be needed to assist with solutions to pollution problems such as acid rain and the disposal of harmful wastes as well to design machines and tools for increasingly complex manufacturing processes. A growing demand for efficient heating and ventilating systems in plants and buildings will also contribute to the need for these engineers.

During the 1985-1992 period, the major requirement for new engineering graduates will be to replace those in this occupational group who voluntarily move into managerial or related occupations. The annual attrition rate of such withdrawals is estimated at about nine per cent.

At the 1981 Census, the three largest provincial concentrations of this group's workforce were in Ontario (54 per cent); Quebec (16 per cent); and Alberta (11 per cent) and males were predominant. The proportion of females (two per cent) reported in the 1981 Census is increasing. A recent survey by the Canadian Council of Professional Engineers indicated that about six per cent of those conferred with engineering bachelor's degrees in 1984 were females.

In 1984, mechanical engineers comprised about 27 per cent of all university engineering graduates. It is expected that this specialty will experience a balanced labour market situation for both recent graduates and experienced engineers over the 1985-1992 period.

For further information, contact:

Canadian Engineering Manpower Council  
401-116 Albert Street  
Ottawa, Ontario  
K1P 5G3  
(613) 232-2474

## 2151

**Metallurgical/Materials Engineers**

Examples: Physical, Extractive and Process Metallurgy  
 Materials Science  
 Materials Handling

Employment trends (000s) 1985: 1.6                      1992: 1.8                      Change: 0.2

Sex composition (1981)		Age composition (1981)	
Females:	3%	Under 25 years:	6%
Males:	97%	Over 54 years:	12%

**Engineering Bachelor's Degrees Conferred (1984)**

Females: 12%  
 Males: 88%

Employment is expected to grow at the average rate, based on the outlook in Iron and Steel, Metal Mills and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. The search for new metals and new uses for present ones will spur the growth in employment of extractive metallurgists. In the 1970s, occupations in this group experienced an increase in their share of the workforce as a result of changes in technology and/or work organization.

During the 1985-1992 period, the major demand for new engineering graduates will be to replace those in this occupational group who voluntarily move into managerial or related occupations. The annual attrition rate of such withdrawals is estimated at about 10 per cent.

At the 1981 Census, the three largest provincial concentrations of this group's workforce were in Ontario (49 per cent); Quebec (32 per cent); and British Columbia (seven per cent) and males were predominant. The proportion of females (three per cent) reported in the 1981 Census is increasing. A recent survey by the Canadian Council of Professional Engineers indicated that about 12 per cent of those receiving engineering bachelor's degrees in 1984 were females.

In 1984, metallurgical/materials engineers constituted about two per cent of all university engineering graduates. It is expected that this specialty will experience a balanced labour market situation for both recent graduates and experienced engineers over the 1985-1992 period.

For further information, contact:

Canadian Engineering Manpower Council  
 401-116 Albert Street  
 Ottawa, Ontario  
 K1P 5G3  
 (613) 232-2474

## Mining Engineers

Examples: Mine Design/Construction (underground and surface)  
Mineral Exploration  
Extraction  
Processing

Employment trends (000s) 1985: 2.8	1992: 3.2	Change: 0.4
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 3%	40%	Under 25 years: 6%	25%
Males: 97%	60%	Over 54 years: 15%	12%

### Engineering Bachelor's Degrees Conferred (1984)

Females: 3%  
Males: 97%

Employment is expected to grow at the average rate, based on the outlook in the Metal Mines, Business Services and Petroleum/Gas/Wells/ Incidental Mining Services sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Mining engineers will be required to meet a still-strong demand for coal; to develop technologically advanced efficient mining systems; to meet increasingly stringent mine safety standards; to recover low grade ores to replace already depleted current mineral deposits; to oversee a growing number of off-shore mining ventures; and to aid recovery of minerals from the sea.

During the 1985-1992 period, the major requirement for new engineering graduates will be to replace those in this occupational group who voluntarily move into managerial or related occupations. The annual attrition rate of such withdrawals is estimated at about nine per cent.

At the 1981 Census, the three largest provincial concentrations of this group's workforce were in Ontario (32 per cent); British Columbia (18 per cent); and Alberta (18 per cent) and males were predominant. According to the 1981 Census, about three per cent of this occupational group are females. A more recent survey by the Canadian Council of Professional Engineers, concerning those who were conferred with university engineering bachelor's degrees in 1984, also indicated a similar proportion. On the basis of 1985-1988 university engineering enrollment data, the percentage of females is forecast to increase between 5 per cent and 12 per cent.

In 1984, about two per cent of all university engineering graduates were mining engineers. It is expected that this engineering specialty will experience a balanced labour market situation for both recent graduates and experienced engineers over the 1985-1992 period.

For further information, contact:

Canadian Engineering Manpower Council  
401-116 Albert Street  
Ottawa, Ontario  
K1P 5G3  
(613) 232-2474



Employment trends (000s)	1985: 4.4	1992: 4.9	Change:0.5
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 5%	40%	Under 25 years: 12%	25%
Males: 95%	60%	Over 54 years: 6%	12%

Females:	13%
Males:	87%

Canadian Engineering Manpower Council  
401-116 Albert Street  
Ottawa, Ontario  
K1P 5G3  
(613) 232-2474

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**Other Professional Engineers, plus 2146 Agricultural Engineers, plus 2157 Community Planners.**

Examples: Engineering Physics/Science  
 Agricultural and Forestry Engineering  
 Geological Engineering  
 Biological Engineering

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Employment trends (000s) 1985: 13.4	1992: 15.4	Change: 2.0
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 11%	40%	Under 25 years: 7%	25%
Males: 89%	60%	Over 54 years: 13%	12%

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**Engineering Bachelor's Degrees Conferred (1984)**

Females: 12%  
 Males: 88%

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Employment prospects in this group will depend on the outlook in the Business Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The ever-present need for energy from oil and gas will help geological engineers. Also, new and advanced technologies should provide increased opportunities in the engineering physics/science field. Finally, the application of biotechnological research to agriculture should provide opportunities for agricultural engineers.

During the 1985-1992 period, the major requirement for new engineering graduates will be to replace those in this occupational group who voluntarily move into managerial or related occupations. The annual attrition rate of such withdrawals is estimated at about nine per cent.

At the 1981 Census, the three largest provincial concentrations of this group's workforce were in Ontario (38 per cent); Quebec (23 per cent); and Alberta (15 per cent) and males were predominant. The proportion of females (11 per cent) reported in the 1981 Census is increasing. A recent survey by the Canadian Council of Professional Engineers indicated that about 12 per cent of those conferred with engineering bachelor's degrees in 1984 were females.

Despite overall high levels of unemployment currently affecting the Canadian economy, these occupations are facing labour market conditions that are among the most favorable as indicated by their lower-than-average U.I. claimant rate and higher-than-average hard-to-fill vacancy rate.



In 1984, Other Professional Engineers (CCDO 2159) constituted about 14 per cent of all university engineering graduates. It is expected that these specialties will experience substantial demands (in areas of emerging technology, e.g. biological/biomedical engineers), for both recent graduates and experienced engineers over the 1985-1992 period.

For further information, contact:

Canadian Engineering Manpower Council  
401-116 Albert Street  
Ottawa, Ontario  
K1P 5G3  
(613) 232-2474

## Surveyors

Examples: Marine Surveyor  
Pipe-line Surveyor  
Topographic Surveyor

Average salaries, full-time employed two years after graduation (1984):

Community college: \$18,600

University: \$22,700

Employment trends (000s) 1985: 16.3	1992: 18.7	Change: 2.4
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.0
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Total requirements (000s):	3.4
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 5%	40%	Under 25 years: 36%	25%
Males: 95%	60%	Over 54 years: 4%	12%

Employment is expected to grow at the average rate, based on the outlook in the Business Services, Public Administration and Construction sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

Technological innovations using satellites to map inaccessible areas have benefited surveyors. However, this occupational group is highly sensitive to construction activity that follows the demand for structures, the cycles of investments and the increased demand for capital goods. In addition, the aerial survey sector, specifically mapping, is highly sensitive to the economic environment and technological change. The transition from analogue to digital methods has been both costly and difficult for this profession.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively low proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

For further information, contact:

Canadian Association of Aerial Surveyors  
46 Elgin Street, Suite 33  
Ottawa, Ontario  
K1P 5K6  
(613) 232-8770

# 2163

## Draughting Occupations

Examples: Aeronautical Draughter  
Architectural Draughter  
Cartographic Draughter  
Electronic Draughter  
Engineering Draughter  
Mechanical Draughter

Average salaries, full-time employed two years after graduation (1984):

Community college: \$18,100

University: N/A

Employment trends (000s) 1985: 40.9                      1992: 46.6                      Change: 5.7

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 3.8

Total requirements (000s):                      9.5

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 18%	40%	Under 25 years: 26%	25%
Males: 82%	60%	Over 54 years: 6%	12%

Employment is expected to grow at the average rate, based on the outlook in the Business Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions.

The conceptualization and design of new products have been revolutionized by computer-assisted design. State-of-the-art systems provide three-dimensional visualization and facilitate the conceptualizing of complex shapes and machine assemblies (CAD). The tendency is toward the gradual integration of these systems with the programming of automated machine-tools (computer-assisted manufacturing and design - CAD/CAM) and management function.

New technology has eliminated repetitive tasks such as correcting and altering drawings, ancillary work such as filing and copying and working drawings. As a result, this occupational group is producing the required new skills.

The widespread use of computer-aided design will counteract much of the new demand for draughters brought about by increasingly complex products and processes. However, prospects are better for those who are more highly qualified and skilled and familiar with computer systems.

At the 1981 Census, males were predominant in this occupational group. A relatively low proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large. The large proportion of young people in the occupation suggests that this is an occupation that offers entry-level employment to graduates from colleges.

### Engineering Technologists and Technicians, plus 2164 Architectural Technologists and Technicians

Examples: Electrical Technician  
Electronic Technician  
Quality Control Technician  
Die Designer

Average salaries, full-time employed two years after graduation (1984):

Community college: \$20,000      University: \$23,400

Employment trends (000s) 1985: 45.7      1992: 51.7      Change: 6.0

Estimated attrition due to labour force withdrawals (000s)      1985-92: 3.5

Total requirements (000s):      9.5

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 8%	40%	Under 25 years: 29%	25%
Males: 92%	60%	Over 54 years: 6%	12%

Employment is expected to grow at the average rate, based on the outlook in a wide range of sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The widespread application of technology and miniaturization in the office (personal computers) in the home (thermostats) and on the shop floor will benefit this occupational group, particularly in the electrical, electronic, industrial and mechanical engineering disciplines.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively low proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large. The large number of young people in these occupations suggests it is a source of entry for graduates of technical and community colleges.

### Mathematicians, Statisticians and Actuaries

Examples: Insurance Company Actuary  
 Sampling Expert  
 Demographer  
 Time-Study Statistician  
 Consulting Actuary  
 Casualty Actuary

Employment trends (000s) 1985: 5.6		1992: 6.4	Change: 0.8
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.7
Total requirements (000s):			1.5
Sex composition (1981)		Age composition (1981)	
Females:	32%	All occ.	40%
Males:	68%	Under 25 years:	10%
		Over 54 years:	9%
		All occ.	25%
			12%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration, Finance and Business Services sectors, where these occupations are concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Knowledge of computer science will be necessary for new entrants in this occupational group. With growing demands for sophisticated pension and insurance information, the need for actuaries could increase much faster than the average rate.

At the 1981 Census, males represented a majority in this occupational group. In addition, a below-average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large.

The geographical distribution for these occupations are also a factor to be taken into consideration. Over half (51.1 per cent) of its workforce was located in Ontario at the time of the 1981 Census.

These occupations are currently facing favourable labour market conditions as indicated by their lower-than-average U.I. claimant rate and higher-than-average hard-to-fill vacancy rate.

For further information, contact:

Canadian Institute of Actuaries  
 275 Slater Street, Suite 1505  
 Ottawa, Ontario  
 K1P 5H9  
 (613) 236-8196

The Economists' Sociologists' and Statisticians'  
 Association  
 200 Cooper Street, Suite 9  
 Ottawa, Ontario  
 K2P 0G1  
 (613) 236-9181



**Systems Analysts, Computer Programmers and Related Occupations**

Examples: Accounting-Methods Analyst  
 Simulation Systems Analyst  
 Software Systems Programmer

Average salaries, full-time employed two years after graduation (1984):

Community college: \$22,100                      University: \$27,500

Employment trends (000s) 1985: 59.7                      1992: 67.3                      Change: 7.6

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 4.2

Total requirements (000s):                      11.8

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 29%	40%	Under 25 years: 20%	25%
Males: 71%	60%	Over 54 years: 2%	12%

Employment is expected to grow faster than the average rate, based on the outlook in the Business Services, Public Administration and Finance sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, occupations in this group experienced an increase in their share of the workforce as a result of changes in technology and/or work organization. Prospects remain bright as computers, robots and numerically controlled tools continue to spread throughout industry and in the office. The information industry will continue to lead to openings in such related occupations as database manager, information systems engineer and information scientist.

Based on occupational specific research, this professional group has experienced a two-year lag because it is tied to capital-intensive investment and to global economic conditions. As companies purchase more sophisticated computer technology, job responsibilities are changing to encompass knowledge of data processing where only some familiarity was previously required. Those systems analysts who are employed in the private sector are now finding it necessary to have more managerial skills and to be more familiar with company organization and business objectives. Therefore, as work organization and technology continue to change, future demand for this occupation could be higher than projected here. However, the availability of easier-to-use computers suggests that the needs will be greater for software designers and less for lower-skilled programmers.

At the 1981 Census, males represented a majority in this occupational group. In addition, a relatively low proportion was older than 54, foreshadowing that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Data Processing Management Association  
1501 Carling Avenue, Suite L8  
Ottawa, Ontario  
K1Z 7M1  
(613) 728-1962



### Occupations in Mathematics, Statistics, Systems Analysis and Related Fields, Not Elsewhere Classified

Example: Statistical Technician

Employment trends (000s) 1985: 1.0	1992: 1.2 Change:	0.2
Estimated attrition due to labour force withdrawals (000s)		1985-92: 0.1
	Total requirements (000s):	0.3

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 47%	40%	Under 25 years: 55%	25%
Males: 53%	60%	Over 54 years: 3%	12%

Employment is expected to grow at a faster-than-average rate, based on the outlook in the Public Administration, Business Services and Finance sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, occupations in this group have experienced an increase in their share of the workforce as a result of changes in technology and/or work organization. Employment opportunities are better for those who are familiar with computer systems.

At the 1981 Census, females and males were almost evenly distributed in this occupational group. In addition, a relatively low proportion was older than 54, indicating that increases in labour demand owing to age-retirement may not be large. The high proportion of young people in the occupation reflects the likelihood that this an occupation offering entry level employment to graduates from university and colleges.

The geographical distribution for this occupation is also a factor to be taken into consideration. Over half (50.3%) of its workforce was in Ontario at the time of the 1981 Census.

## 2311

**Economists**

Examples: Agricultural Economist  
 Development Economist  
 Economic Adviser  
 Forest Economist  
 Labour Economist

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$26,200

Employment trends (000s) 1985: 12.0                      1992: 13.6                      Change: 1.6

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 1.5

Total requirements (000s):                      3.1

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 20%	40%	Under 25 years: 6%	25%
Males: 80%	60%	Over 54 years: 10%	12%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Economists with a strong quantitative background should enjoy employment opportunities in business firms, research organizations, banks, and, to a limited extent, government. All of these institutions seek to forecast and analyze trends in an increasingly complex domestic and international economic environment. The continuing search for depletable resources should benefit mineral economists.

At the 1981 Census, males were predominant in this occupational group. A slightly below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

For further information, contact:

The Economists' Sociologists' and Statisticians' Association  
 200 Cooper Street, Suite 9  
 Ottawa, Ontario  
 K2P 0G1  
 (613) 236-9181

### Sociologists, Anthropologists and Related Social Scientists

Examples: Anthropologist  
Criminologist  
Social Ecologist

Employment trends (000s) 1985: 1.3	1992: 1.5	Change: 0.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.1
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Total requirements (000s):	0.3
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 38%	40%	Under 25 years: 14%	25%
Males: 62%	60%	Over 54 years: 3%	12%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration, Education Services and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions.

In the 1970s, occupations in this group experienced an increase in their share of the workforce as a result of changes in technology and/or work organization. Prospects are better for sociologists with a quantitative background and training in applied fields such as crime and deviance, sex roles and demography. The occupations in this group will depend to some extent on social programs and, with overall fiscal constraints, employment opportunities could be somewhat limited in the Public Administration sector.

At the 1981 Census, males represented a majority in this occupational group. A relatively low proportion of the group was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

The geographical distribution for these occupations is also a factor to be taken into consideration. Over half (53.0%) of their workforce was located in Quebec at the time of the 1981 Census.

These occupations are currently facing labour market conditions that are among the least favorable as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

# 2315

## Psychologists

Examples: Child Development Consultant  
Clinical Psychologist  
Industrial Psychologist  
Educational Psychologist

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$30,600

Employment trends (000s) 1985: 8.8	1992: 10.0	Change: 1.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.1
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Total requirements (000s):	2.3
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 52%	40%	Under 25 years: 5%	25%
Males: 48%	60%	Over 54 years: 6%	12%

Employment is expected to grow at the average rate, based on the outlook in the Education Services, Health/Welfare and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Psychologists who have a clinical specialization should enjoy good employment opportunities as the maintenance of good mental health becomes an important issue. Counselling and industrial psychology also become important fields in an increasingly complex society.

At the 1981 Census, females and males were almost evenly distributed in this occupational group. A relatively low proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing favorable labour market conditions as indicated by their lower-than-average U.I. claimant rate and higher than average hard-to-fill vacancy rate.

**Social Workers**

Examples: Case Supervisor  
Counsellor  
Welfare Case Worker  
Family Counsellor

Average salaries, full-time employed two years after graduation (1984):

Community college: \$18,500                      University: \$24,800

Employment trends (000s) 1985: 32.9                      1992: 38.3                      Change: 5.4

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 5.2

Total requirements (000s):                      10.6

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 63%	40%	Under 25 years: 6%	25%
Males: 37%	60%	Over 54 years: 8%	12%

Employment is expected to grow at the average rate, based on the outlook in the Health/Welfare Institutions and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Social workers are employed to counsel patients, conduct research, administer social programs, and assist vocational and education counsellors. They may also work as part of a team in the overall administration of social programs. Volunteer work is one way of attaining marketable skills to pursue a career in this field as competition is extremely keen. These occupations will depend to some extent on social programs and, with overall fiscal constraints, employment opportunities will be somewhat limited in the Public Administration and Health and Welfare sectors.

At the 1981 Census, females represented a majority in this occupational group. In addition, a below-average proportion of the group was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Canadian Association of Schools of Social Work  
151 Slater Street, Suite 909  
Ottawa, Ontario  
K1P 5H4  
(613) 563-1217



# 2333

## Occupations in Welfare and Community Services

Examples: Community Service Worker  
Recreation Leader  
Youth Club Supervisor  
Child Welfare Worker

Average salaries, full-time employed two years after graduation (1984):

Community college: \$15,300

University: \$19,100

Employment trends (000s) 1985: 44.6	1992: 52.8	Change: 8.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 8.9
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Total requirements (000s):	17.1
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 69%	40%	Under 25 years: 33%	25%
Males: 31%	60%	Over 54 years: 11%	12%

Employment is expected to grow at the average rate, based on the outlook in the Health/Welfare Institutions, Public Administration and Miscellaneous Services sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Volunteer programs provide one way for young people to gain marketable skills to be social workers. These programs also allow people to donate their time and talents and concurrently they gain managerial and leadership skills while involved in community activities. The prospects of camp counsellors/directors, and community service workers are bright in light of the continuing trend of mothers working outside the home.

At the 1981 Census, females represented a 7 to 3 majority in this occupational group. In addition, an average proportion of this group was older than 54, indicating that increases in labour demand owing to age-retirement may be moderate.

**Lawyers and Notaries**

Examples: Barrister  
Solicitor

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A                      University: \$27,900

Employment trends (000s) 1985: 34.5                      1992: 40.4                      Change: 5.9

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 4.8

Total requirements (000s):                      10.7

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 15%	40%	Under 25 years: 3%	25%
Males: 85%	60%	Over 54 years: 9%	12%

Employment prospects for this group will depend on the outlook in the Business Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Lawyers are engaged in private practice and specialize in such fields as civil litigation, corporate law, common law, taxation, family law, labour relations law, patents and trademarks, real estate transactions, estate planning etc. They may also be engaged in a general practice. Barristers and/or solicitors may be engaged in practice as an employee at a public agency e.g. city solicitor, crown attorney, or a business firm. Employment prospects for lawyers may increase as corporations seek to patent a growing number of technological innovations. There is a need to sift through increasingly complex business regulations as society seeks to define their rights under family law and the new constitution and as consumers seek to protect themselves.

Notaries are involved in drawing up contracts, mortgages, deeds, wills and other legal documents. They also certify and acknowledge the validity of signatures and dates on documents. Notaries take affidavits and depositions for use before courts and they administer oaths.

At the 1981 Census, males were predominant in this occupational group. A below-average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large.



## 2351

**Librarians, Archivists and Conservators**

Examples: Bibliographer

Cataloguer

Film Librarian

Hospital Librarian

Music Librarian

Records Librarian

Average salaries, full-time employed two years after graduation (1984):

Community college: \$13,200

University: \$22,900

Occupation 2351 Employment trends ('000) 1985-92 change: 1.3

Estimated attrition due to labour force withdrawals (000s)

1985-92: 3.9

Total requirements (000s):

5.2

Sex composition (1981)

All occ.

Age composition (1981)

All occ.

Females: 80%

40%

Under 25 years: 4%

25%

Males: 20%

60%

Over 54 years: 16%

12%

Employment is expected to grow less than the average rate, based on the outlook in the Education Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may not be particularly sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Prospects are better for those specializing in scientific and technical fields, particularly in research libraries. Knowledge of computerized information/index systems is considered especially advantageous in all types of libraries. Chances for employment have been curtailed somewhat in public and educational institutions by government budgetary restraints.

This occupational group is made up of three distinct specialties each requiring different qualifications, skills and labour market conditions. Archivists work mainly with unpublished materials in both the private and public sectors. Employment prospects are better than those of librarians.

Conservators are highly specialized, being engaged in the physical conservation of documents. Employment opportunities are best within this occupational group as there are few qualified persons to fill the positions.

Librarians work with published materials in all formats from print to videotape or computer files in libraries in both the private and public sectors. They can also be employed in commercial information services that publish materials. Employment prospects at the present time are not favourable.

At the 1981 Census, females were predominant in this occupational group. In addition, a relatively large proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be large.

For further information, contact:

Canadian Library Association  
151 Sparks Street  
Ottawa, Ontario  
K1P 5E3  
(613) 232-9625

## 2353

**Technicians in Library, Museum and Archival Sciences**

Examples: Artifact and Fossil Restorer

Taxidermist

Document Restorer

Anthropology Technician

Paintings Restorer

Employment trends (000s) 1985: 3.6	1992: 3.9	Change: 0.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.6
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Total requirements (000s):	0.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 68%	40%	Under 25 years: 22%	25%
Males: 32%	60%	Over 54 years: 10%	12%

Employment is expected to grow at the average rate, based on the outlook in the Education Services, Public Administration and Miscellaneous Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may not be particularly sensitive to changing economic conditions. In the 1970s, occupations in this group experienced an increase in their share of the workforce in the industries where they are primarily employed as a result of changes in technology and/or work organization. This occupational group are paraprofessionals who work mainly in libraries. The proliferation of computerized library systems that catalogue publications and control circulation may increase job opportunities for technicians. With reduced public sector expenditures, however, occupational demand may be reduced.

At the 1981 Census, females represented a 7 to 3 majority in this occupational group. An about-average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

The geographical distribution of these occupations are also a factor to be taken into consideration. Over half (54.7%) of its workforce was located in Quebec at the time of the 1981 Census.

**Educational and Vocational Counsellors**

Examples: Educational Adviser

Group Development Worker

Vocational Counsellor

Average salaries, full-time employed two years after graduation (1984):

Community college: \$16,300

University: \$25,500

Employment trends (000s) 1985: 5.8	1992: 6.2	Change: 0.4
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.8
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Total requirements (000s):	1.2
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 48%	40%	Under 25 years: 6%	25%
Males: 52%	60%	Over 54 years: 9%	12%

Employment is expected to grow at less than the average rate, based on the outlook in the Education Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may not be particularly sensitive to changing economic conditions.

Educational and vocational counsellors engage in helping individuals with career development, educational, social and personal decisions. The occupations in this group will depend on school enrolment as most counsellors are employed in advising students, particularly those in secondary schools. As ongoing education increases among the 25-50 age group, so too will the demand for counsellors in colleges and universities. With a tight and complex labour market, students making career decisions will likely need more guidance from this group, although with overall fiscal constraints employment opportunities will be somewhat limited.

At the 1981 Census, females and males were almost evenly distributed in this occupational group. In addition, a below-average proportion was older than 54, indicating that increases in labour demand due to age-retirement may not be large.

These occupations are currently facing unfavorable labour market conditions as indicated by a higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

Examples: Lecturer  
Professor  
Tutor, Universities

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A University: \$27,500

Employment trends (000s)	1985: 35.1	1992: 31.8	Change: -3.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 4.9
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Total requirements (000s): 1.6

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 24%	40%	Under 25 years: 3%	25%
Males: 76%	60%	Over 54 years: 13%	12%

Employment is expected to decline till the mid-90s, based on the outlook in the Education Services sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may not be particularly sensitive to changing economic conditions.

Based on source population trends, decline is expected. If adult education, paid educational leave or general interest courses continue to grow among the 25-50 age group, the employment decline may be partly offset. The continuing increase in research grants and the flow of foreign students in both graduate and undergraduate programs are significant factors contributing to demand in this occupational group.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement\* may be moderate.



**Elementary and Kindergarten Teachers**

Examples: Classroom Teacher  
In-School Administrator

Average salaries, full-time employed two years after graduation (1984):  
Community college: N/A                      University: \$24,400

Employment trends (000s) 1985: 170.0                      1992: 177.4                      Change: 7.4

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 22.9

Occupation 2731    Total Requirements ('000) 1985-92                      : 30.3

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 80%	40%	Under 25 years: 7%	25%
Males: 20%	60%	Over 54 years: 5%	12%

Employment is expected to grow at less than the average rate, based on the outlook in the Education Services sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions. By the mid-80s, increasing enrolment should lead to an increase in demand for this group of teachers, although most vacancies may be filled from the lists of surplus teachers. Teachers applying to another jurisdiction and new entrants should note that where layoffs have occurred the laid-off teachers are given priority over new applicants if other positions become available. Some openings may be created by increases in junior kindergartens.

Teachers are provincially certified and interprovincial mobility is somewhat restricted. The great majority of elementary and kindergarten teachers teach or supervise a grade or grades from K through 8 depending on the province or territory. Teachers tend to be generalists at this level. There is growing demand for specialists to teach French as a second language outside of Quebec. Growth in programs to help the educationally handicapped is also contributing to demand for special needs teachers. Some provincial associations have reported shortages: Alberta (vocational educational and some specializations), Manitoba (French immersion, special education and music), New Brunswick (French immersion, French second language, special education), Prince Edward Island (French immersion), Newfoundland (music, speech pathology), Northwest Territories (family life).

At the 1981 Census, females were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Canadian Teachers Federation  
110 Argyle Street  
Ottawa, Ontario  
K2P 1B4  
(613) 232-1506

Canadian School Trustees' Association  
1140 Morrison Drive, Suite 220  
Ottawa, Ontario  
K2H 8S9  
(613) 829-9108



## 2733

**Secondary School Teachers**

Examples: Classroom Teacher  
In-School Administrator

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$27,200

Employment trends (000s) 1985: 130.5	1992: 124.1	Change: -6.4
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 14.9
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Occupation 2733	Total Requirements ('000) 1985-92	: 8.5
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 42%	40%	Under 25 years: 3%	25%
Males: 58%	60%	Over 54 years: 7%	12%

Employment is expected to decline, based on the outlook in Education Services sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may not be particularly sensitive to changing economic conditions. Declining enrolment should translate into keen competition for jobs at this level, although by 1990 this situation should reverse itself, as babies of the 70s begin to enter high school.

Teachers are provincially certified and interprovincial mobility is somewhat restricted. Most secondary school educators teach or supervise a grade or grades from 9 through 13 depending on the province or territory. Many secondary teachers have teaching specialties such as arts, science or mathematics.

Teachers applying to other jurisdictions and prospective entrants should note that where layoffs have occurred the laid-off teachers are given priority over new applicants if other positions become available. However, growing demand for French-language instruction outside Quebec will boost those teachers having this specialty and opportunities should arise throughout the country.

At the 1981 Census, males represented a majority in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Canadian Teachers Federation  
110 Argyle Street  
Ottawa, Ontario  
K2P 1B4  
(613) 232-1506

Canadian School Trustees' Association  
1140 Morrison Drive, Suite 220  
Ottawa, Ontario  
K2H 8S9  
(613) 829-9108

**Elementary and Secondary School Teaching and Related Occupations, Not Elsewhere Classified**

Examples: Audio-Visual Aid Director  
Teaching Consultant

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$22,300

Employment trends (000s) 1985: 29.5                      1992: 30.1                      Change: 0.6

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 4.9

Occupation 2739    Total Requirements ('000) 1985-92                      : 5.5

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 81%	40%	Under 25 years: 12%	25%
Males: 19%	60%	Over 54 years: 8%	12%

Employment is expected to grow less than the average rate, based on the outlook in the Education Services sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions.

Pupil enrolment in both secondary and elementary schools will affect employment opportunities for these teachers. Elementary enrolment is expected to increase in the mid-80s, with similar developments occurring at the secondary level in their 90s. Increasing demand for French-language instruction outside of Quebec will likely mean that those with this specialty will be better able to market themselves and find employment.

At the 1981 Census, females were predominant in this occupational group. In addition, a below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Canadian School Trustees' Association  
1140 Morrison Drive, Suite 220  
Ottawa, Ontario  
K2H 8S9  
(613) 829-9108

Canadian Teachers Federation  
110 Argyle Street  
Ottawa, Ontario  
K2P 1B4  
(613) 232-1506

## 2791

**Community College and Vocational School Teachers**

Examples: Barber College and Beauty School Teacher  
 Business College Instructor  
 Commercial Art Teacher  
 Trade School Instructor  
 Welding Instructor  
 Vocational School Instructor

Employment trends (000s) 1985: 30.1	1992: 26.1	Change: -4.0
Estimated attrition due to labour force withdrawals (000s)		1985-92: 4.0
Occupation 2791	Total Requirements ('000) 1985-92	: 0.0

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 39%	40%	Under 25 years: 3%	25%
Males: 61%	60%	Over 54 years: 10%	12%

Employment is expected to decline, based on the outlook in the Education Services sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may not be particularly sensitive to changing economic conditions. The growth in technical training and retraining resulting from technological changes in several fields should boost job opportunities for some of these teachers. Community colleges are emerging as leaders in coping with retraining demands.

Based on source population trends, a decline is expected. But if recurrent education, paid education leave, or general interest courses continue to grow among the 25-50 age group, the employment decline might be partly offset.

At the 1981 Census, males represented a majority in this occupational group. In addition, an about-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

For further information, contact:

Canadian School Trustees' Association  
 1140 Morrison Drive, Suite 220  
 Ottawa, Ontario  
 K2H 8S9  
 (613) 829-9108

**Fine Arts Teachers, Not Elsewhere Classified**

Examples: Art Instructor  
 Dancing Professor  
 Music Professor  
 Singing Teacher  
 Drama Instructor

Employment trends (000s) 1985: 18.3			1992: 19.8	Change: 1.5
Estimated attrition due to labour force withdrawals (000s)				1985-92: 4.4
Total requirements (000s):				5.9
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	72%	40%	Under 25 years:	18%
Males:	28%	60%	Over 54 years:	16%
				25%
				12%

Employment is expected to grow at less than the average rate, based on the outlook in the Education Services sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Possible growing interest in the arts, brought on by increased leisure time, may contribute to some job opportunities in this occupational group.

At the 1981 Census, females represented a majority in this occupational group. In addition, a relatively large proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

For further information, contact:

Canadian School Trustees' Association  
 1140 Morrison Drive, Suite 220  
 Ottawa, Ontario  
 K2H 8S9  
 (613) 829-9108

Examples: Instructor of the Blind  
Remedial Teacher  
Educational Therapist  
Special Education Teacher  
Teacher of Disabled Persons

Community college: N/A

University: \$22,500

Employment trends (000s) 1985: 20.4

1992: 22.4

Change: 2.0

Estimated attrition due to labour force withdrawals (000s)

1985-92: 3.1

Total requirements (000s):

5.1

### Sex composition (1981)

All occ.

### Age composition (1981)

All occ.

Females: 71%

40%

Under 25 years: 19%

25%

Males: 29%

60%

Over 54 years: 5%

12%

Employment is expected to grow at the average rate, based on the outlook in the Education Services sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may not be particularly sensitive to changing economic conditions. Society's growing acceptance and awareness of physically and mentally disabled persons may contribute to good job prospects for this group.

The growth rate of this group of teachers between 1971 and 1981 was one of the highest among teaching specialties. Employment increased a substantial 14 per cent as a result of the growing acceptance and awareness of physically and mentally disabled people. Employment prospects have been better for this group with special qualifications but only to the extent that funding of these special programs has not been reduced. Teachers applying to another jurisdiction and prospective entrants should note that where layoffs have occurred the laid-off teachers are given priority over new applicants if other positions become available.

At the 1981 Census, females represented a 7 to 3 majority in this occupational group. A relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.



**Physicians and Surgeons**

Examples: General Practitioner  
 Cancer Specialist  
 Allergist  
 Dermatologist  
 Gynaecologist  
 Forensic Medicine Specialist  
 Heart Specialist  
 Geriatrist  
 Psychiatrist  
 Pediatrician

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$38,900

Employment trends (000s) 1985: 44.4                      1992: 49.1                      Change: 4.7

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 9.4

Total requirements (000s):                      14.1

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 17%	40%	Under 25 years: 3%	25%
Males: 83%	60%	Over 54 years: 19%	12%

Employment is expected to grow at the average rate, based on the outlook in the Physicians' Offices, and Health/Welfare sectors where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may be particularly sensitive to government expenditure policies which in turn may be sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The population/physician ratio is not expected to change but the demand for specific fields of practice may increase while others will decrease. The growth of the elderly segment of the population will require a greater number of specialists. Medical advances that are preserving and prolonging life will have a multiplicative effect on the demand for doctors. This demand may be counterbalanced by the introduction of more sophisticated diagnostic technologies as well as new procedures, drugs and devices to treat patients.



At the 1981 Census, males were predominant in this occupational group. A relatively large proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

For further information, contact:

Canadian Hospital Association  
Research Department  
17 York Street  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005

**Dentists**

Examples: Dental Surgeon  
 Oral Surgeon  
 Endodontist  
 Orthodontist  
 Periodontist

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$58,700

Employment trends (000s) 1985: 11.3	1992: 12.2	Change: 0.9
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 2.0
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Total requirements (000s):	2.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 8%	40%	Under 25 years: 3%	25%
Males: 92%	60%	Over 54 years: 18%	12%

Employment is expected to grow faster than the average rate, based on the outlook in Dentists Offices where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may be moderately sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. An expanding population, an increasing number of dental plans and a need for regular dental care will create employment opportunities.

Some openings, however, will be eliminated by advanced dental technology and research that is doing away with tooth decay. Still, changes in the pattern of delivery of dental care and increased public awareness of the importance of dental health may open up additional opportunities.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively large proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

For further information, contact:

Canadian Dental Association  
 1815 Alta Vista Drive  
 Ottawa, Ontario  
 K1G 3Y6  
 (613) 523-1770

## Veterinarians

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$26,100

Employment trends (000s) 1985: 3.5	1992: 3.8	Change: 0.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.4
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Total requirements (000s):	0.7
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 16%	40%	Under 25 years: 6%	25%
Males: 84%	60%	Over 54 years: 11%	12%

Employment is expected to grow less than the average rate, based on the outlook in the Agriculture, and Public Administration sectors where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may not be particularly sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Growth in the pet population as well as emphasis on scientific methods of raising livestock may lead to some job openings for veterinarians. Specialization in animal toxicology and pathology may increase opportunities, which mainly exist with already-established veterinarian practices. Many veterinarians are employed in the food processing and inspection sector.

At the 1981 Census, males were the majority in this occupational group. However, the female representation is increasing as indicated by recent enrolment data in veterinarian faculties (up to 50 per cent in some institutions). An average proportion in 1981 was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

This occupation is facing labour market conditions that are among the most favorable as indicated by its lower-than-average U.I. claimant rate and higher-than-average hard-to-fill vacancy rate.

For further information, contact:

Agriculture Canada  
 Farm Input Section  
 Sir John Carling Building  
 930 Carling Avenue  
 Ottawa, Ontario  
 K1A 0C5  
 (613) 995-9554

**Osteopaths and Chiropractors**

Employment trends (000s) 1985: 2.4	1992: 2.8	Change: 0.4
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.6
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Total requirements (000s):	1.0
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 13%	40%	Under 25 years: 3%	25%
Males: 87%	60%	Over 54 years: 17%	12%

Employment is expected to grow at the average rate, based on the outlook in the Health/Welfare Institutions sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may not be particularly sensitive to changing economic conditions.

In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The growing demand for alternate methods of medical treatment may brighten the employment outlook for these occupations.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively large proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

For further information, contact:

Canadian Hospital Association  
 Research Department  
 17 York Street  
 Ottawa, Ontario  
 K1N 9J6  
 (613) 238-8005

## 3119

**Health Diagnosing and Treating Occupations, Not Elsewhere Classified**

Examples: Logopedist  
 Mental Health Consultant  
 Naturopathic Physician  
 Podiatrist  
 Pediculist

Employment trends (000s) 1985: 3.8	1992: 4.4	Change: 0.6
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.8
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Total requirements (000s):	1.4
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 55%	40%	Under 25 years: 13%	25%
Males: 45%	60%	Over 54 years: 14%	12%

Employment is expected to grow at faster than the average rate, based on the outlook in the Health/Welfare Institutions sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions or to government's expenditure policies.

In the 1970s, occupations in this group experienced an increase in their share of the workforce in the industries where they are primarily employed as a result of changes in technology and/or work organization. Some of these occupations may experience an increase in demand for their services as a growing awareness of good health and physical condition prompts physical activities that may contribute to injuries or conditions requiring treatments.

At the 1981 Census, females and males were almost evenly distributed in this occupational group. An about-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

For further information, contact:

Canadian Hospital Association  
 Research Department  
 17 York Street  
 Ottawa, Ontario  
 K1N 9J6  
 (613) 238-8005



### Nurses, Registered, Graduate and Nurses-in-Training

Examples: Graduate Nurse  
Nurse Consultant  
Physical Therapy Nurse  
School Nurse  
Occupational Health Nurse

Average salaries, full-time employed two years after graduation (1984):

Community college:	\$23,200	University:	\$25,400
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Employment trends (000s)	1985: 193.6	1992: 225.8	Change: 32.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 32.7
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Total requirements (000s): 64.9

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 95%	40%	Under 25 years: 15%	25%
Males: 5%	60%	Over 54 years: 7%	12%

Employment is expected to grow at an average rate, based on the outlook in the Health/Welfare Institutions sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may be particularly sensitive to government expenditure policies. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The demand for health care personnel to provide services for geriatric, chronic and long-term care will increase as the population ages. The trend toward services outside acute care hospitals (clinics, rehabilitation and chronic centres, aging homes) is likely to create some opportunities. The development of new medical techniques, drugs, devices and procedures — together with a trend giving more responsibilities to nurses in monitoring and diagnosing changes in patients — are likely to lead to demands for personnel with higher education levels.

Shortages exist at the moment in hospital specialties of intensive care, cardiology, geriatrics, psychiatry and emergency and in institutions located in remote areas.

At the 1981 Census, females were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Canadian Hospital Association  
Research Department  
17 York Street  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005

Canadian Nurses Association  
50 The Driveway  
Ottawa, Ontario  
K2P 1E2  
(613) 237-2133



## 3134

**Registered Nursing Assistants**

Average salaries, full-time employed two years after graduation (1984):

Community college: \$19,900

University: N/A

Employment trends (000s) 1985: 51.4                      1992: 60.1                      Change: 8.7

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 8.5

Sex composition (1981)		All occ.		Total requirements (000s):		17.2
Age composition (1981)		All occ.		Age composition (1981)		All occ.
Females:	91%		40%	Under 25 years:	4%	25%
Males:	9%		60%	Over 54 years:	12%	12%

Employment is expected to grow at the average rate, based on the outlook in the Health/Welfare Institutions sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may be particularly sensitive to government expenditure policies. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Job opportunities may exist in facilities such as convalescent homes and day care services, chronic and rehabilitation centres, in home care programs, and to some extent in diagnostic and therapeutic centres. The declining rate of growth for nursing assistants in acute hospitals is likely to be offset by a higher rate of growth in other institutions.

At the 1981 Census, females were predominant in this occupational group. An average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

For further information, contact:

Canadian Hospital Association  
Research Department  
17 York Street  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005

Canadian Nurses Association  
50 The Driveway  
Ottawa, Ontario  
K2P 1E2  
(613) 237-2133

**Audio and Speech Therapists, plus 3137 Physiotherapists, plus 3138 Occupational Therapists**

Examples: Oral Therapist  
 Speech Pathologist  
 Electrotherapist  
 Mechanotherapist  
 Recreational Therapist

Employment trends (000s) 1985: 15.1	1992: 17.6	Change: 2.5
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 2.6
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Total requirements (000s):	5.1
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 85%	40%	Under 25 years: 25%	25%
Males: 15%	60%	Over 54 years: 6%	12%

Employment prospects in this group will depend on the outlook in Health/Welfare, Education Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations are particularly sensitive to government expenditure policies. In the 1970s, occupations in this group did not experience a significant change in their share of the workforce in the industries where they are primarily employed as a result of changes in technology and/or work organization.

Audio and speech therapists, physiotherapists and occupational therapists are in short supply throughout all provinces because of the growth in demand for services that this group of rehabilitative personnel provides. The growing trend to early detection of speech and hearing problems, the increase in the elderly segment of the population with chronic conditions or with rehabilitation needs, the public acceptance of disabled persons, and advances in medical procedures brighten the prospects of most of these occupations. More opportunities exist for rehabilitative personnel in remote areas than elsewhere.

At the 1981 Census, females were predominant in this occupational group. A below-average proportion was older than 54, implying that increases in labour demand due to age-retirement may not be large.

For further information, contact:

École de réadaptation  
University of Montreal  
2375 Côte Sainte-Catherine  
Montreal, Quebec  
H3T 1A8  
(514) 392-5053

Canadian Hospital Association  
Research Department  
17 York Street  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005

Canadian Association of Occupational Therapists  
110 Eglinton Avenue West  
3rd Floor  
Toronto, Ontario  
M4R 1A3  
(416) 487-5404

**Pharmacists**

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$29,600

Employment trends (000s) 1985: 14.5                      1992: 15.9                      Change: 1.4

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 3.2

Total requirements (000s):                      4.6

Sex composition (1981)		All occ.	Age composition (1981)		All occ.
Females:	42%	40%	Under 25 years:	10%	25%
Males:	58%	60%	Over 54 years:	18%	12%

Employment is expected to grow at the average rate, based on the outlook in Trade and Health/Welfare Institutions sector where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to overall changing economic conditions but would be particularly sensitive to government expenditure policies. Based on historical analysis, the occupational group has been found to be moderately sensitive to changes in technology and/or work organization.

However, this situation may change in the future in Health/Welfare institutions as the increasing complexity of drug therapy and the increasing need to monitor interactions with patients subjected to more multidagnostic and treatment schedules could increase the relative importance of pharmacists within hospitals. The aging of the population requiring more treatments and drugs, as well as the growing number of pharmaceutical products, will contribute to positive job prospects for this occupation.

At the 1981 Census, males represented a majority in this occupational group. In addition, a relatively large proportion was older than 54, indicating that increases in labour demand owing to age-retirement may be large.

For further information, contact:

Canadian Hospital Association  
Research Department  
17 York Street  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005

Association of Deans of Pharmacy of Canada  
College of Pharmacy  
University of Saskatchewan  
Saskatoon, Saskatchewan  
S7N 0W0  
(306) 966-6328  
(514) 343-6440

**Dietitians and Nutritionists**

Examples: Diet Therapist  
Research Nutritionist

Employment trends (000s) 1985: 3.5	1992: 4.1	Change: 0.6
Estimated attrition due to labour force withdrawals (000s)		1985-92: 0.7

		Total requirements (000s):	1.3
Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 94%	40%	Under 25 years: 22%	25%
Males: 6%	60%	Over 54 years: 5%	12%

Employment is expected to grow at the average rate, based on the outlook in the Health/Welfare Institutions sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The dietitian's activities have expanded beyond hospitals to clinics, counselling and community health establishments. Current trends in health care delivery indicate that the demand for dietitians may increase with concomitant emphasis on community-based programs for seniors. These include home care, day care and nutrition promotion and prevention programs for lifestyle and chronic diseases. Career advancement should be better for those dietitians who have some area of specialization, e.g., diabetes, geriatrics, pediatrics and food service management.

At the 1981 Census, females were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Canadian Hospital Association  
Research Department  
17 York Street  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005

The Canadian Dietetic Association  
480 University Avenue  
Suite 604  
Toronto, Ontario  
M5G 1V2  
(416) 596-0857

**Optometrists**

Employment trends (000s) 1985: 2.2		1992: 2.6	Change: 0.4
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.6
Total requirements (000s):			1.0
Sex composition (1981)			
Females:	17%	All occ. 40%	Age composition (1981) Under 25 years: 10%
Males:	83%	60%	Over 54 years: 24%
			All occ. 25%
			12%

Employment prospects in this group will depend on the outlook in the Health/Welfare Institutions sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may not be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The increasing importance placed on good vision will benefit this occupational group. The growing number of people over age 45 is quite likely to increase demand for vision care, leading to some job opportunities. Also, as children now require frequent eye examinations to ensure such abilities as depth and colour perception, employment prospects may be better.

At the 1981 Census, males were predominant in this occupational group. A considerable proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be significant.

For further information, contact:

Canadian Hospital Association  
Research Department  
17 York Street  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005



## 3154

**Dispensing Opticians**

Examples: Eyeglass Fitter  
 Eyeglass Maker  
 Optical Dispenser  
 Ophthalmic Dispenser

Employment trends (000s) 1985: 3.4		1992: 3.8	Change: 0.4
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.5
Total requirements (000s):			0.9
Sex composition (1981)		Age composition (1981)	
Females:	39%	Under 25 years:	17%
Males:	61%	Over 54 years:	9%

Employment prospects in this group will depend on the outlook in the Trade sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may not be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The demand for dispensing opticians will be affected by a growing segment of the population over age 45; children receiving more screening tests; contact lenses becoming cheaper through technological improvements; and the increasing number of people likely to own more than one pair of corrective lenses.

At the 1981 Census, males represented a majority in this occupational group. A below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Canadian Hospital Association  
 Research Department  
 17 York Street  
 Ottawa, Ontario  
 K1N 9J6  
 (613) 238-8005

**Radiological Technologists and Technicians**

Examples: Nuclear Medicine Technician  
 Radioisotope Technician  
 Roentgen Technologist  
 X-ray Technician

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$20,310

Employment trends (000s) 1985: 10.2                      1992: 11.9                      Change: 1.7

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 1.4

Total requirements (000s):                      3.1

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 79%	40%	Under 25 years: 7%	25%
Males: 21%	60%	Over 54 years: 4%	12%

Employment is expected to grow at the average rate, based on the outlook in the Health/Welfare, and Institutions sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be particularly sensitive to governments' expenditure policies. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

During a one-year period between 1979-80, general hospitals employed 92 per cent of all radiological technicians but many of these positions changed from full-time to part-time. Within this occupation group, X-ray technicians were most likely to be in demand, particularly in some western provinces. However, opportunities were better for those technologists whose specialty was in nuclear medicine because of its relative newness and expansion. With technological advances affecting this particular occupational group, there may be shifts in demand for ultra sound technicians and nuclear magnetic resources, with some decline in demand for X-ray technicians. Employment opportunities are best in hospitals serving sparsely populated areas.

At the 1981 Census, females were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Canadian Hospital Association  
 Research Department  
 17 York Street  
 Ottawa, Ontario  
 K1N 9J6  
 (613) 238-8005

### Medical Laboratory Technologists and Technicians

Examples: Biochemistry Technologist  
Microbiology Technologist  
Pathological Technician  
Pharmacy Technician

Average salaries, full-time employed two years after graduation (1984):

Community college: \$21,300

University: \$22,700

Employment trends (000s) 1985: 36.0	1992: 41.7	Change: 5.7
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 5.4
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Total requirements (000s):	11.1
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 78%	40%	Under 25 years: 21%	25%
Males: 22%	60%	Over 54 years: 5%	12%

Employment is expected to grow at the average rate, based on the outlook in the Health/Welfare Institutions sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be particularly sensitive to government expenditure policies. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Prospects are promising because of the growing reliance on laboratory tests for detection, diagnosis and treatment of cancer and heart disease. Advances in clinical research and bio-engineering will most likely lead to increased demand for personnel to operate new laboratory equipment. However, a concern over medical costs may limit growth here. Owing to rapid technological advances, those technologists who are inactive and wish to return to work will find it necessary to undertake refresher courses to be able to find suitable employment.

At the 1981 Census, females were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Canadian Hospital Association  
Research Department  
17 York Street  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005

**Denturists, plus 3158 Dental Hygienists/Assistants, plus 3161 Dental Laboratory Technicians**

Examples: Oral Hygienist  
Orthodontic Technician  
Dental Ceramist

Employment trends (000s) 1985: 25.8	1992: 33.9	Change: 8.1
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 4.8
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Total requirements (000s):	12.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 80%	40%	Under 25 years: 22%	25%
Males: 20%	60%	Over 54 years: 5%	12%

Employment is expected to grow at a faster than average rate, based on the outlook in Miscellaneous Manufacturers (including plastics), Health/Welfare Institutions and Dentists Offices sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may not be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The growing emphasis being placed on orthodontic and cosmetic dental work, as well as an aging population's need for crowns and dentures, could spur a growth in demand for denturists and dental laboratory technicians.

At the 1981 Census, females were a 4 to 1 majority in this occupational group. A relatively small proportion was older than 54, indicating that increases in labour demand owing to age-retirement may not be large.

The geographical distribution for this occupation is also a factor to be taken into consideration. Over half (55.4%) of its workforce was located in Ontario at the time of the 1981 Census.

For further information, contact:

Canadian Hospital Association  
Research Department  
17 York Street  
Ottawa, Ontario  
K1N 9J6  
(613) 238-8005

## 3313

**Product and Interior Designers**

Examples: Floral Designer  
 Decorating Consultant  
 Fabric Designer  
 Furniture Designer

Average salaries, full-time employed two years after graduation (1984):

Community college: \$15,800                      University: \$17,700

Employment trends (000s) 1985: 21.2                      1992: 23.8                      Change: 2.6

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 3.7

Total requirements (000s):                      6.3

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 58%	40%	Under 25 years: 22%	25%
Males: 42%	60%	Over 54 years: 10%	12%

Employment is expected to grow at the average rate, based on the outlook in the Trade and Business and Education Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Demand for product designers is expected to be good in response to an emphasis placed on product quality, aesthetic appeal, practicality and safety, and on high technology products, particularly for those manufactured for industries. Population and income growth will open up opportunities for floral and fashion designers. Job turnover is rapid and competition is fierce in this line of work, except for those with particular talent and skills.

At the 1981 Census, females represented a majority in this occupational group. An about-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.



**Advertising and Illustrating Artists**

Examples: Art Director  
 Commercial Artist  
 Graphic Artist

Average salaries, full-time employed two years after graduation (1984):

Community college: \$17,400                      University: \$23,400

Employment trends (000s) 1985: 18.7                      1992: 21.4                      Change: 2.7

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 2.5

Total requirements (000s):                      5.2

Sex composition (1981)		All occ.	Age composition (1981)		All occ.
Females:	37%	40%	Under 25 years:	23%	25%
Males:	63%	60%	Over 54 years:	7%	12%

Employment is expected to grow at the average rate, based on the outlook in the Business Services and Education Services, Printing and Publishing sectors where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

A renewed emphasis on visual appeal has benefited commercial artists whose work has been aided to some extent by computer graphics. Competition in this field is keen and those artists with exceptional talents and skills are most likely to be employed.

At the 1981 Census, males represented a majority in this occupational group. In addition, a below-average proportion was older than 54, indicating that increases in labour demand owing to age-retirement may not be large.



## 3315

**Photographers and Camera Operators**

Examples: Aerial Photographer  
 Scientific Photographer  
 Video Camera Operator

Employment trends (000s) 1985: 8.6		1992: 10.3	Change: 1.7
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.1
Total requirements (000s):			2.8
Sex composition (1981)		Age composition (1981)	
Females:	19%	All occ.	
		40%	
Males:	81%	60%	
		Under 25 years:	20%
		Over 54 years:	9%
			25%
			12%

Employment is expected to grow at a faster than average rate, based on the outlook in the Miscellaneous Services and Education Services, Radio and Television Broadcasting sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The increasing use of visual aids in business to promote products, of photographs in law enforcement and medical research, and the popularity of store front photography will provide some opportunities for employment. However, the technology-induced fall in camera prices and increases in quality translate into keen competition for jobs as there may be a decline in demand for the professional photographer. The widening use of VCR machines at social functions may be another factor contributing to the demand of camera operators. Most opportunities are part-time and there is keen competition for vacancies.

At the 1981 Census, males were predominant in this occupational group. In addition, a below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

**Producers and Directors, Performing and Audio-Visual Arts**

Examples: Audio Visual Coordinator  
 Program Director  
 Dramatic Director  
 Sound-Effects Supervisor

Employment trends (000s) 1985: 10.1	1992: 12.2	Change: 2.1
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.1
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Total requirements (000s):	3.2
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 29%	40%	Under 25 years: 12%	25%
Males: 71%	60%	Over 54 years: 6%	12%

Employment is expected to grow at a faster than average rate, based on the outlook in Radio and Television Broadcasting, and Recreation Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The expansion of films, commercials and, more recently, videos will help open job opportunities for directors and producers.

At the 1981 Census, males represented a majority in this occupational group. In addition, a relatively small proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large.

3337

**Radio and Television Announcers**

Examples: Broadcaster  
 Disc Jockey  
 Newscaster  
 Sports Announcer

Employment trends (000s) 1985: 6.5		1992: 7.4	Change: 0.9
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.5
Total requirements (000s):			1.4
Sex composition (1981)		Age composition (1981)	
Females:	18%	All occ.	
		40%	
Males:	82%	60%	
		Under 25 years:	36%
		Over 54 years:	4%
			25%
			12%

Employment is expected to grow at the average rate, based on the outlook in Radio and Television Broadcasting sectors where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The growing number of radio and television stations, including cable, will provide some employment opportunities. However, the increasing popularity of automatic programming equipment may keep the demand for announcers from rising as fast as the broadcasting industry in general.

There is a very high turnover of personnel in this field, which could translate into more numerous job opportunities than indicated in this projection. The fact that a percentage of available work is in the nature of independent contracting, and not staff employment, is also a factor explaining the relatively young age structure of this occupational group.

For further information, contact:

Alliance of Canadian Cinema  
 Television and Radio Artists (ACTRA)  
 2239 Yonge Street  
 Toronto, Ontario  
 M4S 2B5  
 (416) 489-1311

## Writers and Editors

Examples: Advertising Editor  
 Art Editor  
 Book Reviewer  
 Copy Writer  
 Film Editor  
 News Reporter

Average salaries, full-time employed two years after graduation (1984):

Community college: \$17,900                      University: \$18,900

Employment trends (000s) 1985: 29.5                      1992: 33.7                      Change: 4.2

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 5.4

Total requirements (000s):                      9.6

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 42%	40%	Under 25 years: 14%	25%
Males: 58%	60%	Over 54 years: 12%	12%

Employment is expected to grow at the average rate, based on the outlook in the Printing and Publishing, Miscellaneous Services, and Radio and TV Broadcasting sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may not be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Technological advances in office equipment have had considerable impact on this group as word processors allow the writer to be on-line and manipulate numerical data, words and pictures. Writers' and editors' repetitive tasks such as proofreading and editing can be performed automatically. Word processors also allow this group to create or publish documents of high visual quality.

The demand for technical writers may be strong, resulting from the growing need to prepare instructions for complex scientific equipment. Publication writers and editors should also enjoy opportunities for employment as the popularity of publications increases. Familiarity with new office equipment and computer systems is an asset.

At the 1981 Census, males represented a majority in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

For further information, contact:

Canadian Authors Association  
 24 Ryerson Avenue Toronto, Ontario M5T 2P3  
 (416) 364-4203

## 3355

**Translators and Interpreters**

Examples: Foreign Broadcast Translator  
 Scientific Documents Translator  
 Interpreters

Average salaries, full-time employed two years after graduation (1984):

Community college: N/A

University: \$24,300

Employment trends (000s) 1985: 6.0

1992: 6.9

Change: 0.9

Estimated attrition due to labour force withdrawals (000s)

1985-92: 1.1

Total requirements (000s):

2.0

Sex composition (1981)

All occ.

Age composition (1981)

All occ.

Females: 60%

40%

Under 25 years: 13%

25%

Males: 40%

60%

Over 54 years: 12%

12%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration and Miscellaneous Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may not be particularly sensitive to changing economic conditions. In the 1970s, occupations in this group experienced an increase in their share of the workforce in the industries where they are primarily employed as a result of changes in technology and/or work organization.

The need to translate the increasing number of foreign language scientific and technical manuals will spur the demand for those trained in this occupational area. The art of translation is especially relevant in a country such as Canada that actively promotes bilingualism as a policy. Finally, attention should be paid to the growing use of computers to translate material, particularly of a technical nature.

At the 1981 Census, females represented a majority in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

The geographical distribution for this occupation is also a factor to be taken into consideration. Half (50.0%) of its workforce was located in Quebec at the time of the 1981 Census.



**Coaches, Trainers, and Inspectors, Sports and Recreation**

Examples: Gymnasium Instructor  
Physical Training Teacher  
Athletic Coach

Employment trends (000s) 1985: 18.3	1992: 22.5	Change: 4.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.9
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Total requirements (000s):	6.1
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<b>Sex composition (1981)</b>	<b>All occ.</b>	<b>Age composition (1981)</b>	<b>All occ.</b>
Females: 56%	40%	Under 25 years: 50%	25%
Males: 44%	60%	Over 54 years: 2%	12%

Employment is expected to grow at a faster than average rate, based on the outlook in the Recreation Services, Public Administration, and Education Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be highly sensitive to changing economic conditions. An increasing emphasis on sport and recreation should provide some opportunities for this occupational group.

At the 1981 Census, males and females were almost evenly distributed in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing favorable labour market conditions as indicated by their lower-than-average U.I. claimant rate and higher-than-average hard-to-fill vacancy rate.



4111

**Secretaries and Stenographers**

Examples: Legal Secretary  
Stenotypist

Average salaries, full-time employed two years after graduation (1984):

Community college: \$14,100

University: \$16,200

Employment trends (000s) 1985: 365.9

1992: 412.8

Change: 46.9

Estimated attrition due to labour force withdrawals (000s)

1985-92: 71.0

Total requirements (000s):

117.9

Sex composition (1981)

All occ.

Age composition (1981)

All occ.

Females: 99%

40%

Under 25 years: 27%

25%

Males: 1%

60%

Over 54 years: 8%

12%

Employment prospects in this group will depend on the outlook in a number of service sectors where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to changing economic conditions. Secretaries perform a variety of administrative and sometimes clerical duties in an organization. This occupation group is part of a communications network. Secretaries' duties include filing, proofreading, typing, responding to correspondence, taking and transcribing dictation. Some do specialized work as legal and medical secretaries.

Work organization and the impact of new technology differ according to circumstances; that is, the size of the firm and nature of the industry/sector. Word processors are among the office automation equipment contributing to new forms of work organization. Typing is now carried out more efficiently in less time and with greater specialization than previously. Many specific applications of new office automation such as files, text, and sometimes graphics can be integrated.

The secretary's role is most likely to undergo transformation as the price of hardware and software decline and as integration of most office automation continues. The large size of this occupational group practically guarantees a large number of job openings, particularly among part-time workers. The spread of office automation implies that knowledge of new office machines is essential, and that occupational growth projections listed here are likely to be over-estimates.

At the 1981 Census, females were predominant in this occupational group. In addition, a below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

**Typists and Clerk-typists**

Examples: Addressing Clerk  
 Dictaphone Transcriber  
 Multiplex-Machine Operator

Employment trends (000s) 1985: 99.9	1992: 113.2	Change: 13.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 18.3
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Total requirements (000s):	31.6
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 98%	40%	Under 25 years: 38%	25%
Males: 2%	60%	Over 54 years: 6%	12%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration, Finance and Business Services sectors where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to changing economic conditions.

Typists maintain the flow of written communication by typing written, printed and recorded words. Other responsibilities for this group are operating office machines such as copiers, answering telephones and filing. Some specialized typists are clerk-typists and transcribers. Typists are often located in typing pools. Word processing is part of the office automation equipment contributing to new forms of work organization. Although there are still typing pools, new technology has created a potential for change. With the introduction of office automation many applications can be integrated. As a result, different groups of specialized typists can be organized.

The typist's role is most likely to undergo transformation as the price of hardware and software decline, and as integration of most office automation continues. Though office automation has slowed the rate of increase, employment opportunities, particularly part-time, will continue to exist, owing to the sheer size of this occupation group. Prospects are best for those who have the necessary skills to operate the new and existing equipment.

At the 1981 Census, females were extremely predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

This occupation is currently facing labour market conditions that are not very favorable as indicated by its higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

## 4131

**Bookkeepers and Accounting Clerks**

Examples: Assessing Clerk  
 Audit Clerk  
 Charge-Account Clerk  
 Cost Clerk  
 Ledger Clerk

Average salaries, full-time employed two years after graduation (1984):

Community college: \$13,700                      University: N/A

Employment trends (000s) 1985: 386.1                      1992: 434.7                      Change: 48.6

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 77.5

Total requirements (000s): 126.1

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 82%	40%	Under 25 years: 26%	25%
Males: 18%	60%	Over 54 years: 10%	12%

Employment prospects in this group will depend on the outlook in the Trade and Finance sectors where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to changing economic conditions.

The sheer size of this occupation group and the transient nature of many of its members imply that a number of job-openings will continue to exist. In addition, the volume of business transactions and the need to take account of them are expected to increase. Technological advances allow electronic processing, so that small business computers and electronic cash registers can perform a variety of bookkeeping and inventory functions. New microprocessor-based time clocks calculate overtime hours and vacation accrued and perform a variety of data manipulations previously carried out by payroll clerks. These models can communicate with computers that process cheques, eliminating the need for payroll clerks. Most functions performed by this group can be performed faster and more efficiently by new micro-processors, and prices are declining rapidly, thus somewhat limiting job opportunities. The above projections are therefore likely to be over-estimates of the employment growth in this group.

At the 1981 Census, females were predominant in this occupational group. In addition, an about average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

Cashiers and Tellers

Examples: Bank Teller  
Grocery Checker  
Ticket Agent  
Change Attendant

Average salaries, full-time employed two years after graduation (1984):				
Community college: \$11,800		University: N/A		
Employment trends (000s) 1985: 243.1		1992: 273.4		Change: 30.3
Estimated attrition due to labour force withdrawals (000s)				1985-92: 34.3
Total requirements (000s):				64.6
Sex composition (1981)		Age composition (1981)		All occ.
Females: 93%	All occ. 40%	Under 25 years: 53%		25%
Males: 7%	60%	Over 54 years: 5%		12%

Employment prospects in this group will depend on the outlook in the Trade, Finance, and Personal/Hospitality Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions.

Rising population and incomes will create a demand for goods and services and therefore will contribute to a great number of job openings for this large occupation group. Cashiers' opportunities for employment, often of a part-time nature, exist in all sorts of retail businesses.

The expanding use of computerized cash registers, however, has limited their growth somewhat. Four main types of technological changes affecting the banking industry are: electronic funds transfer (EFT), where the physical transfer of paper bank notes, cheques and money orders are now replaced with messages sent by electronic impulses; automated teller machines (ATMs) that allow customers to make cash withdrawals and at times deposit cash and cheques, as well as transfer funds between accounts; counter terminals that are now equipped to enable tellers to transmit current information and can reduce labour used in the recording of information; and cheque truncation where information contained on cheques is recorded electronically.

These innovations have been labour saving, with gains in total productivity. The above projections are therefore likely to be overestimates of the employment growth in this group.

At the 1981 Census, females were highly predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large. The relatively high youth component in these occupations reflects the likelihood that there is rapid movement to other occupations.

These occupations are currently facing labour market conditions that are not very favorable as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

For further information, contact:

Canadian Bankers Association  
P.O. Box 348  
2 First Canadian Place  
Toronto, Ontario  
M5X 1E1  
(416) 362-6092 Ext. 311



**Insurance, Bank and Other Finance Clerks**

Examples: Claims Calculator  
 Foreign Exchange Clerk  
 Discount Clerk  
 Securities Clerk

Employment trends (000s) 1985: 43.9		1992: 50.1	Change: 6.2
Estimated attrition due to labour force withdrawals (000s)			1985-92: 7.5
Total requirements (000s):			13.7
Sex composition (1981)		Age composition (1981)	
Females:	87%	All occ.	
		Under 25 years:	35%
Males:	13%	Over 54 years:	5%
			25%
			12%

Employment is expected to grow at the average rate, based on the outlook in the Finance sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may not be particularly sensitive to changing economic conditions. The rising number of finance and related transactions in business should open up a number of job opportunities for this occupation group. Banks continue to diversify their services into areas such as real estate mortgages and securities, and pursue global markets. Certain aspects may be labour intensive and create some demand for these workers.

Alternatively, the impact of computers on the finance sector has eliminated a number of repetitive back-office tasks such as filing, and data entry. On-line computerization redistributes a good deal of the data keying to direct keying of data through the keyboard and a terminal with editing capacity, thereby enhancing productivity. These changes requiring more analytical skills have resulted in reorganization of tasks in the insurance sector. Raters (those who calculated insurance rates) have become redundant because of software packages. However, with access to customer files and rates, insurance clerks can spend more time with customers and use the data to make themselves more competent.

As trends in office automation continue and computer systems become cheaper and capable of performing more manipulations, the above projections are likely to be overestimates of the employment growth in this group.

At the 1981 Census, females were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large. The relatively high youth component in the occupation reflects the likelihood that there is rapid turnover and movement to other occupations.

For further information, contact:

Canadian Bankers Association  
 P.O. Box 348  
 2 First Canadian Place  
 Toronto, Ontario  
 M5X 1E1  
 (416) 362-6092 Ext. 311



## 4137

**Statistical Clerks**

Examples: Census Clerk  
 Compiler  
 Tabulating Clerk

Employment trends (000s) 1985: 9.8		1992: 11.1	Change: 1.3
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.9
Total requirements (000s):			3.2
Sex composition (1981)		Age composition (1981)	
Females:	74%	All occ.	40%
Males:	26%	Under 25 years:	28%
		Over 54 years:	12%
		All occ.	25%
			12%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions.

The impact of main frame computers has led to the elimination, since the '60s, of repetitive tasks performed by clerical workers and statistical clerks. Clerks in smaller offices have not been affected, but as electronic processing becomes more affordable and more widely distributed, growth will be negatively affected.

The software packages and office equipment that can manipulate data more efficiently will translate into little personnel growth and could transform the skills requirement for this occupation. An increasing demand for data among researchers and analysts will continue to create job openings, though the use of computers to store, manipulate and report the figures will limit the growth of opportunities. Therefore, the above projections are likely to be overestimates of the employment growth in this group.

At the 1981 Census, females represented a great majority in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

The geographical distribution for this occupation is also a factor to be taken into consideration. Over half (53.5%) of its workforce was located in Ontario at the time of the 1981 Census.

**Electronic Data Processing Equipment Operators**

Examples: Word Processing Machine Operator  
 Computer Operator  
 Data Processor

Average salaries, full-time employed two years after graduation (1984):

Community college: \$16,700                      University: N/A

Employment trends (000s) 1985: 75.0                      1992: 84.4                      Change: 9.4

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 9.7

Total requirements (000s):                      19.1

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 80%	40%	Under 25 years: 37%	25%
Males: 20%	60%	Over 54 years: 3%	12%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration, Finance, Trade, and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, occupations in this group experienced an increase in their share of the workforce in the industries as a result of changes in technology and/or work organization.

The extension of word processing machines into all industries will increase job opportunities for word processing machine operators. Automation has transformed the duties of typists and secretaries into those of word processing, which may add to growth in this occupation. However, increasing sophistication and use of micro and personal computers may lower the openings for computer operators. As the functions and capabilities of computers grow, so, too, do the functions of this occupational group. For example, the need for key punch operators, who were once in great demand, is declining as data processing equipment changes from data keying to on-line computerization.

At the 1981 Census, females were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

**Production Clerks**

Examples: Material Checker  
 Progress Clerk  
 Stock Tracer

Employment trends (000s) 1985: 16.9		1992: 18.8	Change: 1.9
Estimated attrition due to labour force withdrawals (000s)			1985-92: 2.1
Total requirements (000s):			4.0
Sex composition (1981)		Age composition (1981)	
Females:	36%	Under 25 years:	24%
Males:	64%	Over 54 years:	9%
			All occ.
			25%
			12%

Employment prospects in this group will depend on the outlook in the Trade, various Durable Manufacturing Sectors and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. In a climate where businesses are striving for internal efficiency, the need for production clerks should create some demand for these clerks who are familiar with this type of information network.

Most production clerks are involved in the movement and transformation of products during manufacture. The impact of the new on-line P.O.S. (Point of Sale) technology is where inventory control, stores stocking and warehousing take place. Firms now have the ability to introduce just-on-time procedures for shelf stocking and decrease their extensive stock rooms. This shift to on-line inventory control has substantially reduced the need for stock clerks.

At the 1981 Census, males represented a majority in this occupational group. In addition, a below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

The geographical distribution for this occupation is also a factor to be taken into consideration. Over half (57.7%) of its workforce was located in Ontario at the time of the 1981 Census.

**Shipping and Receiving Clerks**

Examples: Delivery Clerk  
 Dispatcher Clerk  
 Freight Clerk  
 Loading Clerk  
 Receiving Clerk  
 Routing Clerk

Employment trends (000s) 1985: 89.2		1992: 98.8	Change: 9.6
Estimated attrition due to labour force withdrawals (000s)		1985-92: 11.1	
Total requirements (000s):			20.7
Sex composition (1981)		Age composition (1981)	
Females:	17%	All occ.	40%
Males:	83%	Under 25 years:	38%
		Over 54 years:	11%
		All occ.	25%
			12%

Employment is expected to grow at the average rate, based on the outlook in the Trade, Miscellaneous Transport/Storage, Metal Fabricating and other Food and Beverage sectors where the occupation is concentrated. Reflecting the employment patterns of these sectors, the occupation may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The sheer size and transient nature of this workforce will open up a number of job opportunities. However, new on-line P.O.S. (Point of Sale) technology that permits the shift to on-line inventory control in stores and warehouses has limited growth in this group.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

This occupation is currently facing labour market conditions that are among the least favorable as indicated by its higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

### Stock Clerks and Related Occupations

Examples: Purchasing Clerk  
Parts Clerk  
Commissary Clerk  
Inventory Clerk  
Laboratory Clerk

Average salaries, full-time employed two years after graduation (1984):

Community college: \$11,400                      University: N/A

Employment trends (000s) 1985: 96.3                      1992: 106.2                      Change: 9.9

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 13.2

Total requirements (000s): 23.1

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 28%	40%	Under 25 years: 40%	25%
Males: 72%	60%	Over 54 years: 11%	12%

Employment is expected to grow at the average rate, based on the outlook in the Trade sector where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. A renewed interest in accountability in the use of supplies, and the large size of this group may mean a number of job openings in the future. On the negative side, greater use of computerized inventories may reduce personnel needs or create new skill needs for those in the field.

At the 1981 Census, males represented a majority in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.



**Receptionists and Information Clerks**

Examples: Admitting Clerk  
 Appointment Clerk  
 Clerical Office Assistant  
 Telephone Clerk

Average salaries, full-time employed two years after graduation (1984):

Community college: \$13,200      University: N/A

Employment trends (000s) 1985: 94.2      1992: 107.3      Change: 13.1

Estimated attrition due to labour force withdrawals (000s)      1985-92: 18.7

Total requirements (000s):      31.8

Sex composition (1981)		All occ.	Age composition (1981)		All occ.
Females:	95%	40%	Under 25 years:	37%	25%
Males:	5%	60%	Over 54 years:	9%	12%

Employment is expected to grow at faster than the average rate, based on the outlook in a wide range of Service sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. A continuing need for the human element in promoting a company's image implies that there may be some demand for this occupation group. Typing and word processing skills are an asset.

At the 1981 Census, females were highly predominant in this occupational group. A below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.



## 4192

**Claim Adjusters**

Examples: Complaint Adjuster  
 Freight Adjuster  
 Bill Adjuster

Employment trends (000s) 1985: 9.4	1992: 10.6	Change: 1.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.8
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Total requirements (000s):	3.0
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 65%	40%	Under 25 years: 29%	25%
Males: 35%	60%	Over 54 years: 13%	12%

Employment is expected to grow at the average rate, based on the outlook in the Finance, Public Administration and Trade sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

At the 1981 Census, females represented a majority in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

The geographical distribution for these occupations are also a factor to be taken into consideration. Over half (51.1%) of its workforce was located in Ontario at the time of the 1981 Census.

**General Office Clerks**

Examples: Administrative Clerk  
Forms Control Clerk  
Process Clerk

Average salaries, full-time employed two years after graduation (1984):

Community college: \$13,500      University: N/A

Employment trends (000s) 1985: 141.7      1992: 159.7      Change: 18.0

Estimated attrition due to labour force withdrawals (000s)      1985-92: 28.1

Total requirements (000s): 46.1

Sex composition (1981)		Age composition (1981)	
	All occ.		All occ.
Females: 81%	40%	Under 25 years: 31%	25%
Males: 19%	60%	Over 54 years: 11%	12%

Employment prospects in this group will depend on the outlook in the Public Administration, Trade and Finance sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The large size of this occupational group may mean a large number of job openings in the future. Office automation has had a strong impact on this occupation. Main frame computers have been able to perform the tasks of back-office clerical workers. Small business computers perform a variety of bookkeeping and inventory functions. Office purchasing systems automate the control of office supplies. Quite a number of tasks previously done by this group can be performed by some microprocessors that become more economical every year. Office automation, however, will invariably redefine this group's tasks, which are of a broad nature, and therefore, growth could be slowed to below average.

At the 1981 Census, females were predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

These occupations are currently facing labour market conditions that are not very favorable as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

## 5130

**Supervisors: Sales Occupations, Commodities**

Examples: Antique Dealer  
 Car Dealer  
 Confectioner  
 Florist  
 Jeweller  
 Lumber Dealer  
 Oil Distributor

Employment trends (000s) 1985: 133.1	1992: 144.3	Change: 11.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 25.1
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Total requirements (000s):	36.3
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 30%	40%	Under 25 years: 13%	25%
Males: 70%	60%	Over 54 years: 14%	12%

Employment is expected to grow at less than the average rate, based on the outlook in the Trade sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The occupations in this group cover a wide spectrum of small businesses. This area has been less affected by computerization than others and is one where employment growth traditionally takes place. Although these are supervisory positions, opportunities should be better for those with entrepreneurial skills.

At the 1981 Census, males represented a majority in this occupational group. In addition, a proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

Technical Sales and Related Advisory Occupations

Examples: Construction Equipment Technical Salesperson  
Data Processing Sales Representative  
Industrial Machinery Salesperson

Employment trends (000s) 1985: 11.2		1992: 12.4	Change: 1.2	
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.3	
Total requirements (000s):			2.5	
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	10%	40%	Under 25 years:	12%
Males:	90%	60%	Over 54 years:	10%

Employment is expected to grow at the average rate, based on the outlook in the Trade and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Opportunities exist in this line of work for those marketing the chemical, mechanical, electrical or electronic products of the technological revolution.

At the 1981 Census, males were highly predominant in this occupational group. An average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

## 5133

**Commercial Travellers**

Examples: Pharmaceutical Representative  
 Grocery Salesperson  
 Service Representative

Average salaries, full-time employed two years after graduation (1984):

Community college: \$20,800

University: N/A

Employment trends (000s) 1985: 101.5	1992: 111.1	Change: 9.6
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 14.2
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	Total requirements (000s):	23.8
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 11%	40%	Under 25 years: 10%	25%
Males: 89%	60%	Over 54 years: 12%	12%

Employment is expected to grow at the average rate, based on the outlook in the Trade sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Because of the large size of this group and the high turnover ratio of salespersons, one can expect quite a number of openings. In some sales jobs, people work long and flexible hours or part-time. These jobs are not routine, structured ones. Earnings depend on performance and vary according to the product being sold.

Opportunities are both seasonal and cyclical. During recessions, the volume of sales declines, especially for durable goods, as people tend to postpone large purchases.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

Sales Clerks and Salespersons, Commodities, Not Elsewhere Classified

Examples: Grocery Store Clerk  
Parts Clerk  
Hardware Salesperson

Average salaries, full-time employed two years after graduation (1984):				
Community college: \$15,700			University: N/A	
<hr/>				
Employment trends (000s) 1985: 546.9		1992: 592.7		Change: 45.8
<hr/>				
Estimated attrition due to labour force withdrawals (000s)				1985-92: 23.9
<hr/>				
Total requirements (000s):				69.7
<hr/>				
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	57%	40%	Under 25 years:	30%
Males:	43%	60%	Over 54 years:	13%
				12%

Employment is expected to grow at the average rate, based on the outlook in the Trade sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Because this is a large occupational group, a sizeable number of job openings are expected, though many may be part-time. By enabling them to record transactions and adjustments to inventory automatically, the new electronic cash registers have relieved salespersons of much of the traditional paperwork.

At the 1981 Census, females represented a majority in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.



## 5170

**Supervisors: Sales Occupations, Services**

Examples: Bond Broker  
 Grain Broker  
 Insurance Broker  
 Mortgage Broker  
 Real Estate Broker

Employment trends (000s) 1985: 18.9	1992: 21.6	Change: 2.7
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 4.0
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Total requirements (000s):	6.7
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 23%	40%	Under 25 years: 6%	25%
Males: 77%	60%	Over 54 years: 16%	12%

Employment is expected to grow at the average rate, based on the outlook in the Finance sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, occupations in this group experienced a decrease in their share of the workforce as a result of changes in technology and/or work organization. A considerable number of these workers are self employed. Marketing skills are essential, with specialized knowledge of the related financial sector and a high degree of professionalism. Earnings are directly related to performance.

Employment growth will depend to a large extent on geographic location and general economic activity. As incomes rise and as demographic changes occur, short-term investment and long-term financial planning will increase. As banks and financial institutions pursue global markets, these activities will have a positive effect on those brokers involved in bonds and securities.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

**Insurance Sales Occupations and Agents**

Examples: Insurance Appraiser  
 Policy Writer  
 Fire Claims Adjuster

Average salaries, full-time employed two years after graduation (1984):

Community college: \$20,200                      University: \$23,300

Employment trends (000s) 1985: 49.6                      1992: 56.6                      Change: 7.0

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 9.1

Total requirements (000s):                      16.1

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 28%	40%	Under 25 years: 14%	25%
Males: 72%	60%	Over 54 years: 15%	12%

Employment is expected to grow at the average rate, based on the outlook in the Finance sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

At the 1981 Census, males represented a majority in this occupational group. In addition, a relatively high proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be large.

## 5172

**Real Estate Sales Occupations**

Examples: Land Inspector  
Real Estate Appraiser

Employment trends (000s) 1985: 61.4	1992: 70.0	Change: 8.6
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 14.5
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Total requirements (000s):	23.1
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 37%	40%	Under 25 years: 6%	25%
Males: 63%	60%	Over 54 years: 20%	12%

Employment is expected to grow at the average rate, based on the outlook in the Finance sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The computerization of house listings has enabled brokers to serve prospective buyers more efficiently than in the past. The prime home-buying age group is expected to expand and consequently may contribute to a further increase in demand for the services of this occupational group. Licensing education is required for prospective workers in this occupational group. Provincial governments provide the mandate for training programs in conjunction with real estate associations.

At the 1981 Census, males represented a majority in this occupational group. In addition, a relatively high proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

**Sales Agents and Trades, Securities**

Examples: Bond Dealer  
 Floor Trader  
 Loan Broker  
 Securities Adviser  
 Stock Dealer

Employment trends (000s) 1985: 13.1	1992: 15.0	Change: 1.9
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 3.0
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Total requirements (000s):	4.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 21%	40%	Under 25 years: 12%	25%
Males: 79%	60%	Over 54 years: 17%	12%

Employment is expected to grow at an average rate, based on the outlook in the Finance sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Over the next five years, as Canadian banks pursue global markets, there may be additional demand for the services of this group within banks.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

The geographical distribution for this occupation is also a factor to be taken into consideration. Over half (50.5%) of its workforce was located in Ontario at the time of the 1981 Census.

For further information, contact:

Canadian Securities Institute  
 33 Yonge Street  
 Suite 360  
 Toronto, Ontario  
 M5E 1G4  
 (416) 364-9130

Canadian Bankers Association  
 P.O. Box 348  
 2 First Canadian Place  
 Toronto, Ontario  
 M5X 1E1  
 (416) 362-6092 Ext. 311

### Advertising Sales Occupations

Examples: Program Time Salesperson  
Sign and Display Salesperson

Employment trends (000s) 1985: 8.9		1992: 10.0	Change: 1.1
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.3
Total requirements (000s):			2.4
Sex composition (1981)		Age composition (1981)	
Females:	37%	Under 25 years:	17%
Males:	63%	Over 54 years:	10%
All occ.		All occ.	
40%		25%	
60%		12%	

Employment is expected to grow at an average rate, based on the outlook in the Printing and Publishing, and Business Services sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

In an increasingly competitive economy, the need intensifies to promote and advertise company products. This may increase employment prospects for this occupational group.

At the 1981 Census, males represented a majority in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

**Police Officers and Detectives, Government**

Examples: Chief Detective  
 Constable  
 Firearms Examiner  
 Traffic Officer

Average salaries, full-time employed two years after graduation (1984):

Community college: \$25,400

University: N/A

Employment trends (000s) 1985: 54.5	1992: 62.8	Change: 8.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 3.5
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Total requirements (000s):	11.8
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 4%	40%	Under 25 years: 12%	25%
Males: 96%	60%	Over 54 years: 5%	12%

Employment is expected to grow at the average rate, based on the outlook in the Public Administration sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be particularly sensitive to changing economic and social conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Local government budgetary restraints may serve to limit job openings. The increase in computer-related crimes, the greater sophistication of criminal acts and the police use of computers to identify fingerprints have implications for the job description of police officers.

At the 1981 Census, males were highly predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.



## 6115

**Guards and Related Security Occupations**

Examples: Armoured-Car Guard  
 Prison Guard  
 Reformatory Guard  
 School-Crossing Guard

Average salaries, full-time employed two years after graduation (1984):

Community college: \$17,100

University: N/A

Employment trends (000s) 1985: 80.4

1992: 92.5

Change: 12.1

Estimated attrition due to labour force withdrawals (000s)

1985-92: 27.0

Total requirements (000s):

39.1

Sex composition (1981)

All occ.

Age composition (1981)

All occ.

Females: 18%

40%

Under 25 years: 20%

25%

Males: 82%

60%

Over 54 years: 31%

12%

Employment is expected to grow at about the average rate, based on the outlook in the Business Services, and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic and social conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The large size of this occupation group and a growing concern over protection against theft and vandalism imply numerous job openings in the future, particularly part-time. Though a labour-intensive activity, the greater use of video and electronic monitoring systems certainly affect the guard's duties on the job.

At the 1981 Census, males were predominant in this occupational group. In addition, a considerable proportion was older than 54, implying that increases in labour demand owing to age-retirement may be significant.

**Supervisors: Food and Beverage Preparation and Related Service Occupations**

Examples: Caterer  
Maître d'hôtel

Employment trends (000s) 1985: 56.8	1992: 69.6	Change: 12.8
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 9.3
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Total requirements (000s):	22.1
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 45%	40%	Under 25 years: 18%	25%
Males: 55%	60%	Over 54 years: 11%	12%

Employment is expected to grow faster than the average rate, based on the outlook in the Personal/Hospitality Services sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

As population grows, disposable incomes increase and more leisure time becomes available, caterers may be in greater demand as consumers spend less time on food preparation. As the industry matures and adjusts to technological change, this group's responsibilities must go beyond culinary art to acquiring managerial skills. Advancement opportunities within this group are better for those waiters/waitresses who serve in larger restaurants.

At the 1981 Census, females and males were almost evenly distributed in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

For further information, contact:

The Canadian Federation of Chefs de Cuisine  
466 Crestview Rd.  
Ottawa, Ontario  
K1H 5G9  
(613) 995-0001

## 6121

**Chefs and Cooks**

Examples: Cafeteria Cook  
 First Cook  
 Chef Pâtissier  
 Grill Chef  
 Executive Chef

Employment trends (000s) 1985: 161.7		1992: 196.6	Change: 34.9
Estimated attrition due to labour force withdrawals (000s)			1985-92: 27.3
Total requirements (000s):			62.2
Sex composition (1981)		Age composition (1981)	
Females:	52%	Under 25 years:	39%
Males:	48%	Over 54 years:	11%
			25%
			12%

Employment is expected to grow faster than the average rate, based on the outlook in the Personal/Hospitality Services sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The terms chef and cook are often misinterpreted. However, the chef is more skilled, more highly trained and more experienced. Chefs are responsible for maintaining their restaurant's standards and reputation for cuisine. Cooks prepare the food for the restaurant with the help of short order cooks and kitchen assistants.

Population growth, rising incomes, more leisure time and increasing participation of women in the labour force result in a greater demand for restaurant food, both of a fast-food variety (requiring short order cooks) and, to a greater extent, of a foreign, speciality nature (requiring highly skilled chefs). As the industry matures and adjusts to technological change, this occupational group's responsibilities must go beyond culinary art to acquiring managerial skills — notably in the chef occupation. Technological developments affecting cooking include microwave ovens and computer storage/display of recipes.

At the 1981 Census, females and males were almost evenly distributed in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

For further information, contact:

The Canadian Federation of Chefs de Cuisine  
 466 Crestview Rd.  
 Ottawa, Ontario  
 K1H 5G9  
 (613) 995-0001

**Food and Beverage Serving Occupations**

Examples: Waiter/Waitress  
Cafeteria/buffet Attendant

Employment trends (000s) 1985: 248.2	1992: 306.9	Change: 58.7
Estimated attrition due to labour force withdrawals (000s)		1985-92: 31.8
	Total requirements (000s):	90.5

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 82%	40%	Under 25 years: 59%	25%
Males: 18%	60%	Over 54 years: 4%	12%

Employment is expected to grow faster than the average rate, based on the outlook in the Personal/Hospitality Services sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

There is a distinction between the part-time waiter/waitress who works in a small restaurant and provides fast service and those who serve meals, emphasize comfort and satisfaction in a more relaxed environment. Career waiters/waitresses must be familiar with the items on the menu, and be able to recommend wines and other beverages to complement the meal. Advancement opportunities for waiters/waitresses are better for those employed in large restaurants.

The sheer size of this occupational group and its low entry requirements may mean numerous job openings in the future, especially for the young. Increasing population, income and leisure time will add to the demand for food servers. The use of electronic order machines has improved the beverage server's efficiency.

At the 1981 Census, females were predominant in this occupational group. In addition, a relatively low proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

## 6141

**Funeral Directors, Embalmers and Related Occupations**

Examples: Cremator  
 Embalmer  
 Funeral Attendant  
 Mortician  
 Thanatologist

Average salaries, full-time employed two years after graduation (1984):  
 Community college: \$21,700                      University: N/A

Employment trends (000s) 1985: 3.4                      1992: 4.2                      Change: 0.8

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 1.0

Total requirements (000s):                      1.8

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females:            9%	40%	Under 25 years:    16%	25%
Males:             91%	60%	Over 54 years:     24%	12%

Employment is expected to grow faster than the average rate, based on the outlook in the Personal/Hospitality Services sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The aging of the population will mean a steady demand for the services of this group.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a considerable percentage was older than 54, implying that increases in labour demand owing to age-retirement may be significant.



**Barbers, Hairdressers and Related Occupations**

Examples: Beautician  
Cosmetician  
Manicurist  
Hair Stylist

Employment trends (000s) 1985: 69.7	1992: 86.2	Change: 16.5
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 11.8
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Total requirements (000s):	28.3
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 75%	40%	Under 25 years: 31%	25%
Males: 25%	60%	Over 54 years: 7%	12%

Employment is expected to grow faster than the average rate, based on the outlook in the Personal Hospitality Services sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions.

At the 1981 Census, females represented the large majority of this occupational group. In addition, a below-average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large.



## 6191

**Janitors, Charworkers and Cleaners**

Examples: Chimney Cleaner  
 Floor Cleaner  
 Washroom Attendant  
 Window Cleaner

Employment trends (000s) 1985: 230.7	1992: 264.1	Change: 33.4
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 61.4
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Total requirements (000s):	94.8
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 41%	40%	Under 25 years: 24%	25%
Males: 59%	60%	Over 54 years: 23%	12%

Employment is expected to grow at about the average rate, based on the outlook in Education Services, and Miscellaneous Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The ongoing increase in the number of office buildings and apartment buildings translates into employment opportunities for those who clean and care for the structures. The large size of this group may mean numerous job openings, many of which are part-time.

At the 1981 Census, males represented a majority in this occupational group. In addition, a considerable proportion was older than 54, implying that increases in labour demand owing to age-retirement may be significant.

**Occupations in Labouring and Other Elemental Work: Other Services**

Examples: Auto Washer  
 Baggage Checker  
 Dishwasher  
 Door Tender  
 Engine Cleaner  
 Laundry Labourer  
 Shoe Shiner

Employment trends (000s) 1985: 69.9	1992: 83.6	Change: 13.7
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 10.3
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Total requirements (000s):	24.0
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Sex composition (1981)		All occ.		Age composition (1981)		All occ.	
Females:	45%		40%	Under 25 years:	53%		25%
Males:	55%		60%	Over 54 years:	11%		12%

Employment is expected to grow faster than the average rate, based on the outlook in Personal/Hospitality Services and Trade sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. This is a high-turnover occupation group, so there should be a number of job openings in the future.

At the 1981 Census, males represented a majority in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

# 7113

## Livestock Farmers, plus 7115 Crop Farmers, plus 7119 Farmers, Not Elsewhere Classified

Examples: Apiarist  
Fruit Farmer  
Tomato Farmer  
Poultry Farmer  
Maple-Syrup Maker

Employment trends (000s) 1985: 303.9	1992: 299.3	Change:-4.6
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 108.5
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Total requirements (000s):	103.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 9%	40%	Under 25 years: 5%	25%
Males: 91%	60%	Over 54 years: 35%	12%

Employment is expected to decline, based on the outlook in the Agriculture sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions. Machines are now available to automatically milk dairy cattle and assess the quantity/and quality of milk produced. In addition, automatic potato and seed planters are examples of how technology makes crop farmers more productive, and at the same time reduces their number.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be large.

The Canadian farm industry will be affected by demographic developments, technological change and rates of return on capital. We could expect the average age of the farm operator to decline, primarily because older and retiring farmers pass farms onto younger workers and/or family members.

The age distribution shows that in 1966 approximately 15 per cent of farm operators were under 35 years old. In 1971, this figure remained constant; however, in 1981 the number increased to 22 per cent. This marked decline in the proportion of farm operators older than 35 years will most likely continue. This occurrence will translate into fewer exits and entrants for demographic reasons. However, the age structure of the sector will remain above-average as will its demographic attrition rate.

For further information, contact:

Agriculture Canada  
Farm Income Services Branch  
Sir John Carling Building  
930 Carling Ave.  
Ottawa, Ontario  
K1A 0C5  
(613) 993-6671

**Nursery and Related Workers**

Examples: Greenskeeper  
Landscape Gardener  
Flower Grower

Average salaries, full time employed two years after graduation (1984):

Community college: \$14,200                      University: N/A

Employment trends (000s) 1985: 62.4                      1992: 70.8                      Change: 8.4

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 10.3

Total requirements (000s):                      18.7

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 16%	40%	Under 25 years: 49%	25%
Males: 84%	60%	Over 54 years: 13%	12%

Employment is expected to grow at about the average rate, based on the outlook in Construction, Public Administration and Agriculture sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Residential and commercial interest in indoor greenery and landscaping will increase the demand for those who grow, care for, and transplant flowers, shrubbery and trees. Most opportunities are part-time and seasonal.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

For further information, contact:

Agriculture Canada  
Sir John Carling Building  
930 Carling Ave.  
Ottawa, Ontario  
K1A 0C5  
(613) 995-9554

## 7311

**Captains and Other Officers, Fishing Vessels**

Examples: Skipper  
 Mate  
 Able Seaman  
 Master/Captain/Skipper  
 Deckhand  
 Boatswain

Employment trends (000s) 1985: 2.4		1992: 2.5	Change: 0.1	
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.3	
			Total requirements (000s):	0.4
Sex composition (1981)		All occ.	Age composition (1981)	All occ.
Females:	1%	40%	Under 25 years:	8% 25%
Males:	99%	60%	Over 54 years:	13% 12%

Employment is expected to grow less than the average rate, based on the outlook in Fishing and Fish Products sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Opportunities for this occupation group are largely seasonal. Most captains of fishing vessels are relatively small scale operators and may employ as many as seven helpers. Large sea-going trawlers account for fewer than one per cent (1979) of all fishing vessels but a trend toward more factory freezer trawlers used in offshore activity may limit the opportunities for vessel captains. The developments may also change the structure of the industry. Fishing operations may become more integrated as fish processing is carried out offshore.

Fishing activity and therefore employment opportunities are dependent upon a number of other factors: the supply of fish is regulated by the federal government and quotas are imposed; the price of fish may act as an incentive, but the value of the Canadian dollar vis-à-vis European and U.S. currencies has had some influence since 70 percent of sales are derived from exports.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate. There are low replacement rates for employee turnover and later retirement because of individual ownership of vessels.



**Log Inspecting, Grading, Scaling and Related Occupations**

Examples: Bark Scaler  
 Log Culler  
 Timber Scaler  
 Treesorter

Employment trends (000s) 1985: 2.3	1992: 2.3	Change:0.0
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.4
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Total requirements (000s):	0.4
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 9%	40%	Under 25 years: 29%	25%
Males: 91%	60%	Over 54 years: 13%	12%

Employment is expected to show little growth, based on the outlook in Forestry, Wood and Pulp and Paper sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Some occupations in this group are becoming obsolete as scaling is being computerized, eliminating the job of 'scaler's helper'. Reforestation programs in some provinces may create some demand for loggers in some specific geographical areas.

At the 1981 Census, males were highly predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by its higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.



### Rotary Well-drilling and Related Occupations

Examples: Bailer  
Seismograph Driller  
Service-Rig Operator  
Derrick Worker

Employment trends (000s) 1985: 8.0		1992: 8.8	Change: 0.8	
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.2	
			Total requirements (000s):	1.0
Sex composition (1981)		All occ.	Age composition (1981)	All occ.
Females:	1%	40%	Under 25 years:	51%
Males:	99%	60%	Over 54 years:	2%

Employment is expected to grow at the average rate, based on the outlook in Petroleum/Gas Wells/Incidental Mining Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Employment opportunities in this job category depend on the location (increasingly offshore), the extent of new discoveries, and energy prices.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

The geographical distribution of this occupation is also a factor to be taken into consideration. Almost three-quarters (71.7%) of its workforce was located in Alberta at the time of the 1981 Census.

This occupation is currently facing labour market conditions that are not very favorable as indicated by its higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

**Rock and Soil Drilling Occupations**

Examples: Air Drill Operator  
 Auger-Operator  
 Core Driller

Employment trends (000s) 1985: 9.2	1992: 10.3	Change: 1.1
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.5
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Total requirements (000s):	1.6
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 24%	25%
Males: 99%	60%	Over 54 years: 5%	12%

Employment is expected to grow at about an average rate, based on the outlook in Metal Mines, Petroleum/Gas Wells/Incidental Mining Services and Construction sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Canada's mineral industry is undergoing severe restructuring. Changing patterns of metal consumption, weak commodity prices and keen competition are some factors affecting industry performance and hence employment opportunities. Mine modernization will continue to be an ongoing process as mining companies reduce operating costs and achieve productivity gains. High technology processes are being undertaken in both underground and above ground operations. An automatic drill machine can displace three workers. Vertical crater retreat mining and continuous mining systems are other innovations improving productivity and reducing costs. Faster oil and gas growth may offset current slow mining activity and create some employment opportunities.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a relatively low proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

## 7715

**Blasting Occupations**

Examples: Chute Blaster  
 Dynamiter  
 Seismograph Shooter  
 Well Shooter

Employment trends (000s) 1985: 1.9		1992: 2.1	Change:0.2
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.2
Total requirements (000s):			0.4
Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 2%	40%	Under 25 years: 26%	25%
Males: 98%	60%	Over 54 years: 11%	12%

Employment prospects in this group will depend on the outlook in Metal Mines, Construction and Petroleum/Gas Wells/Incidental Mining Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Advanced technology in mining or semi-automatic mining has increased the efficiency and safety of coal extraction, but has reduced the number of job openings.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

### Moulding, Coremaking and Metal Casting Occupations

Examples: Bench Moulder  
Core Setter  
Die Caster  
Metal Caster  
Wheel Moulder  
Pattern Moulder

Employment trends (000s) 1985: 7.8		1992: 9.0	Change: 1.2	
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.9	
Total requirements (000s):			2.1	
Sex composition (1981)		All occ.	Age composition (1981)	All occ.
Females:	7%	40%	Under 25 years:	25%
Males:	93%	60%	Over 54 years:	12%

Employment is expected to grow at the average rate, based on the outlook in Iron and Steel, Metal Mills and Metal Fabricating sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The advent of plasma technology and automatic machine moulding in metal processing has served to reduce both the hazards and labour content of metal casting. This, combined with the substitution of plastics and other materials for steel, dims the prospects for this occupation.

At the 1981 Census, males were highly predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

The geographical distribution of this occupation is also a factor to be taken into consideration. Over half (57.7%) of its workforce was located in Ontario at the time of the 1981 Census.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

### Tool and Die Making Occupations

Examples: Block Setter  
 Die Cutter  
 Die Maker  
 Gauge Maker  
 Plastic Tool Maker  
 Tool and Jig Builder

Employment trends (000s) 1985: 11.3		1992: 12.5	Change: 1.2
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.7
Total requirements (000s):			2.9
Sex composition (1981)		Age composition (1981)	
Females:	4%	Under 25 years:	19%
Males:	96%	Over 54 years:	18%
All occ.		All occ.	
40%		25%	
60%		12%	

Employment is expected to grow at about the average rate, based on the outlook in Metal Fabricating, Auto Parts and Accessories, and Machinery (including computers) sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The use of computer-controlled machine tools will limit the number of job openings despite strong demand for machined metal parts. Knowledge of numerical control may be an increasingly important feature of employment in this occupation.

A Tool and Die maker is a highly skilled tradesperson who must possess a range of skills beyond that of a machinist. He must design, manufacture, fit and assemble dies to produce varying quantities of duplicate parts. There are no specific educational requirements for entry to this occupation. Apprentice programs are available in most provinces for related occupations in metalworking such as sheet metal workers, boilermakers and machinists. These programs are not always compulsory but are recommended. The apprenticeship period is dependent on the individual's training and work experience. The period for qualification as a journeyman in this trade also varies from province to province.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

The geographical distribution for these occupations are also a factor to be taken into consideration. More than three-quarters (81.8%) of their workforce was located in Ontario at the time of the 1981 Census.



**Machinist and Machine Tool Setting-up Occupations**

Examples: Aircraft Machinist  
 Lathe Machinist  
 Gear Setter  
 Profiler  
 Router Operator  
 Tool Presetter

Employment trends (000s) 1985: 41.4		1992: 45.6	Change: 4.2
Estimated attrition due to labour force withdrawals (000s)			1985-92: 4.9
Total requirements (000s):			9.1
Sex composition (1981)		Age composition (1981)	
Females:	3%	40%	25%
Males:	97%	60%	12%
		Under 25 years:	24%
		Over 54 years:	12%

Employment is expected to grow at the average rate, based on the outlook in Metal Fabricating and Machinery (including computers) sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Despite a strong demand for machined parts in automobiles, appliances and complex industrial machines, the use of computer-controlled machine tools increases the productivity of this group and thus limits job openings. Prospects are better for highly skilled machinists.

Preparation and training for occupations in this group are through an apprenticeship program conducted to provincial standards. Certification is voluntary in most jurisdictions. The apprenticeship period is dependent on the individual's training and work experience. The period for qualification as a journeyman in this trade also varies from province to province.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.



## 8316

**Inspecting, Testing, Grading and Sampling Occupations: Metal Machining**

Examples: Differential Tester  
 Gauge Inspector  
 Tool and Die Inspector  
 Piston Inspector

Employment trends (000s) 1985: 2.2	1992: 2.4	Change: 0.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.3
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Total requirements (000s):				0.5
Sex composition (1981)		Age composition (1981)		All occ.
Females:	16%	Under 25 years:	13%	25%
Males:	84%	Over 54 years:	17%	12%

Employment is expected to grow at less than the average rate, based on the outlook in the Auto Parts and Accessories, Metal Fabricating and Machinery (including computers) sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The growing reliance in manufacturing on computer-aided quality control, where defects are effectively spotted by machines, may limit job opportunities, and produce below-average growth.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

The geographical distribution for these occupations is also a factor to be taken into consideration. More than three-quarters (79.1%) of their workforce was located in Ontario at the time of the 1981 Census.

**Metal Machining Occupations, Not Elsewhere Classified**

Examples: Bench Hand  
 Keysmith  
 Sawsmith

Employment trends (000s) 1985: 6.0	1992: 6.8	Change: 0.8
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.7
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Total requirements (000s):	1.5
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 9%	40%	Under 25 years: 29%	25%
Males: 91%	60%	Over 54 years: 12%	12%

Employment is expected to grow at an average rate, based on the outlook in the Metal Fabricating, and Metal Mills sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, occupations in this group experienced an increase in their share of the workforce as a result of changes in technology and/or work organization.

At the 1981 Census, males were highly predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

The geographical distribution of these occupations is also a factor to be taken into consideration. More than three-quarters (77.4%) of its workforce was located in Quebec at the time of the 1981 Census.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

8333

**Sheet Metal Workers**

Examples: Sheet Metal Worker  
 Tinsmith  
 Tinker  
 Metal Worker

Employment trends (000s) 1985: 22.3	1992: 24.5	Change: 2.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 2.2
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Total requirements (000s):				4.4
Sex composition (1981)		Age composition (1981)		All occ.
Females:	6%	Under 25 years:	25%	25%
Males:	94%	Over 54 years:	10%	12%

Sheet Metal workers find employment in a variety of industries including construction, metal fabricating, auto/parts, machinery, aircraft, electrical products, metal mills, trade, and others. Employment of sheet metal workers in this group of industries is expected to grow at the average rate. In the construction industry, sheet metal workers are employed in the residential and non-residential building sectors and are involved in new and renovation work. Employment in the trade is sensitive to economic conditions. Technological change has not had a significant impact on employment levels. Training for the trade is provided by apprenticeship. Certification is compulsory in British Columbia, Alberta, Ontario, Quebec, and within an eight-kilometer radius of cities in Saskatchewan.

At the 1981 Census, males were highly predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

These occupation are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

### Welding and Flame Cutting Occupations

Examples: Acetylene Cutter  
 Gas Brazier  
 Jig Fitter  
 Welding-Machine Operator  
 Tank Solderer  
 Steel Cutter

Employment trends (000s) 1985: 84.8	1992: 94.4	Change: 9.6
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 6.8
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Total requirements (000s):	16.4
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 4%	40%	Under 25 years: 24%	25%
Males: 96%	60%	Over 54 years: 8%	12%

Employment is expected to grow at an average rate, based on the outlook in Metal Fabricating, Miscellaneous Services, Machinery, and Construction sectors, where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. A small yet growing use of robots to carry out both spot and arc welding will limit somewhat the number of job openings in this still large occupation group.

Preparation and training for occupations in this group are through an apprenticeship program conducted to provincial standards. Certification is compulsory in Alberta. The apprenticeship period is dependent on the individual's training and work experience. The period for qualification as a journeyman in this trade also varies from province to province.

There are many kinds of welders, with differing skill requirements depending on the welding technique, type of metal and thickness of material. These range from spot welding requiring very little skill to plasma welding demanding considerable training. These training requirements vary from ferrous to non-ferrous metals. Employers may require welders to be flexible, for instance, having construction-related skills as well as pipe-fitting skills.

Technological advances in welding/burning vary in the different industrial sectors. In the shipbuilding sector, burning operations have been extensively automated. In the construction of pressure pipe lines and boilers, the number of welders has declined relative to output because of the introduction of automated precision welding equipment. The demand for welders will vary from industry to industry, and will depend on specific sector performance.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Mechanical Contractors Association of Canada  
116 Albert Street  
Suite 408  
Ottawa, Ontario  
K1P 5G3  
(613) 232-0492

### Inspecting, Testing, Grading and Sampling Occupations: Metal Shaping and Forming, Except Machining

Examples: Boiler Tester  
Chain Inspector  
Spring Tester

Employment trends (000s) 1985: 2.0		1992: 2.2	Change: 0.2	
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.3	
Total requirements (000s):			0.5	
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	12%	40%	Under 25 years:	18%
Males:	88%	60%	Over 54 years:	18%

Employment is expected to grow at an average rate, based on the outlook in the Metal Fabricating and Iron and Steel sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, occupations in this group experienced an increase in their share of the workforce as a result of changes in technology and/or work organization. Although a large amount of metal fabrication is being done by machine, inspectors are needed to ensure high quality control.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be large.

The geographical distribution of this occupation is also a factor to be taken into consideration. Over half (59.0%) of its workforce was located in Ontario at the time of the 1981 Census.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.



8337

**Boilermakers, Platers and Structural Metal Workers**

Examples: Boilermaker  
Boiler Erector

Employment trends (000s) 1985: 4.0		1992: 4.4	Change: 0.4
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.5
Total requirements (000s):			0.9
Sex composition (1981)		Age composition (1981)	
Females:	2%	All occ.	
		40%	
Males:	98%	60%	
		Under 25 years:	18%
		Over 54 years:	12%

Boilermakers are employed in the industries of metal fabricating, construction, shipbuilding, rail transport, petroleum and coal products, electric power, iron and steel, and oil and gas. Total employment of boilermakers in all industries should grow at the average rate.

Boilermakers fabricate and repair boiler tanks, heat exchangers, fired heaters, reactors and other pressure vessels. In the construction industry, employment is provided largely by industrial plant construction, including pulp mills, mine mills, generating plants, and oil and gas plants. Since boilermakers also must repair and renovate existing equipment, the trade is less prone to large cyclical swings in employment than would otherwise be the case. However, slack demand for new industrial capacity will result in reductions in occupational employment levels. Recent shifts in the industrial composition away from the industries employing this group would limit job opportunities if these persist. Training is via apprenticeship. Certification is compulsory in Quebec.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

**Motor Vehicle Fabricating and Assembling Occupations, Not Elsewhere Classified**

Examples: Automotive Builder  
 Body Fitter  
 Panel Setter

Employment trends (000s) 1985: 27.6		1992: 29.1	Change: 1.5
Estimated attrition due to labour force withdrawals (000s)			1985-92: 2.4
Total requirements (000s):			3.9
Sex composition (1981)		Age composition (1981)	
Females:	16%	Under 25 years:	22%
Males:	84%	Over 54 years:	7%

Employment is expected to grow at less than the average rate, based on the outlook in the Motor Vehicles and Trailers, and Auto Parts and Accessories sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The greater use of automatic processes/robots in the automotive industry may limit job opportunities. A possible increase in demand for auto parts may benefit the auto industry and hence the workers employed in it. The recent structural changes taking place in the automotive parts sector will redefine these workers' tasks. Skill integration will be the result of new production techniques as workers become part of a team. The number of occupational classifications will decline as a result of this new work organization.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

The geographical distribution for these occupations is also a factor to be taken into consideration. More than three-quarters (78.6%) of its workforce was located in Ontario at the time of the 1981 Census.

## 8515

**Aircraft Fabricating and Assembling Occupations, Not Elsewhere Classified**

Examples: Aircraft Fitter  
 Aircraft Builder  
 Controls Assembler  
 Dimpler  
 Equipment Assembler  
 Rigger

Employment trends (000s) 1985: 5.6	1992: 6.4	Change: 0.8
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.7
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Total requirements (000s):	1.5
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 10%	40%	Under 25 years: 31%	25%
Males: 90%	60%	Over 54 years: 11%	12%

Employment is expected to grow at the average rate, based on the outlook in the Aircraft and Parts sector, where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. While the concentration of the aircraft industry in Ontario means most job openings will be there, a new helicopter plant in Quebec may lead to opportunities there.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

The geographical distribution of these occupations is also a factor to be taken into consideration. Over one half (57.3%) of its workforce was located in Ontario at the time of the 1981 Census.

## Electrical and Related Equipment Installing and Repairing Occupations

Examples: Automobile Electrician  
 Aircraft Electrician  
 Battery Repairer  
 Motor Repairer  
 Marine Equipment Electrician  
 Stage Electrician  
 Refrigeration and Air Conditioning Mechanic  
 Major Appliance Repairer

Average salaries, full-time employed two years after graduation (1984):

Community college: \$23,700                      University: N/A

Employment trends (000s) 1985: 36.6                      1992: 40.4                      Change: 3.8

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 4.2

Total requirements (000s):                      8.0

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 2%	40%	Under 25 years: 18%	25%
Males: 98%	60%	Over 54 years: 12%	12%

Employment is expected to grow at the average rate, based on the outlook in Trade and Construction sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Products repaired by this occupation group are becoming more plentiful owing to the desire for greater leisure and comfort. But the use of electronic parts makes these products more efficient and less in need of repair. However, there is a strong tendency to repair costly appliances rather than purchase new ones.

Preparation and training for occupations in this group are through an apprenticeship program conducted to provincial standards. Certification for Refrigeration and Air Conditioning Mechanics is compulsory in some jurisdictions. Pre-employment training is provided in trades and vocational schools. The apprenticeship period is dependent on the individual's training and work experience. The period for qualification as a journeyman in this trade also varies from province to province.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

8535

### Electronic and Related Equipment Installing and Repairing Occupations, Not Elsewhere Classified

Examples: Communications Technician  
 Radar Mechanic  
 Radio Electrician  
 Sound Technician  
 Alarm Systems Installer  
 Installer and Repairer, Public Address System  
 Repairer, Television-Studio Equipment

Average salaries, full-time employed two years after graduation (1984):

Community college: \$20,700

University: N/A

Employment trends (000s) 1985: 13.8                      1992: 15.5                      Change: 1.7

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 1.0

Total requirements (000s):                      2.7

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 8%	40%	Under 25 years: 23%	25%
Males: 92%	60%	Over 54 years: 6%	12%

Employment is expected to grow at the average rate, based on the outlook in a wide range of sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, occupations in this group experienced an increase in their share of the workforce as a result of changes in technology and/or work organization.

Greater demand for electronic equipment such as multi-switching telephones, radio and television transmitters, sound recording and reproduction equipment, computers and radiation detection apparatus will lead to a concomitant need for those who can repair such equipment in the plant. The spread of computers into many areas, including schools and hospitals, will create job openings for computer technicians. But these will be limited by the computers' improved reliability and ease of repair, as well as the use of computers themselves to diagnose problems in other computers.

Preparation and training for some occupations in this group are through an apprenticeship program conducted to provincial standards. Pre-employment training is provided in trades and vocational schools. A radio-communications equipment repairer would usually follow the apprenticeship program set out for an electronic mechanic. The apprenticeship period is dependent on the individual's training and work experience.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large.



**Inspecting, Testing, Grading and Sampling Occupations: Fabricating, Assembling, Installing**

Examples: Calibration Tester  
 Circuit Tester  
 Household Appliance Inspector  
 Battery Tester  
 Motors and Controls Tester  
 Telephone Inspector and Tester

Employment trends (000s) 1985: 9.0	1992: 10.4	Change: 1.4
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.4
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Total requirements (000s):	2.8
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 38%	40%	Under 25 years: 20%	25%
Males: 62%	60%	Over 54 years: 13%	12%

Employment is expected to grow at an average rate, based on the outlook in the Electrical/Electronic Products sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. A need for stricter quality control in increasingly complex electrical and electronic equipment may provide some job opportunities. At the same time, however, the growing use of lasers to detect defects and the possibility of robotic vision may limit, to a certain extent, future job growth.

At the 1981 Census, males represented a majority in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

The geographical distribution for these occupations is also a factor to be taken into consideration. Six out of 10 of its workforce was located in Ontario at the time of the 1981 Census.



### Radio and Television Service Repairers

Examples: Amplifier Repairer  
Radio Technician  
Sound-Equipment Servicer

Employment trends (000s) 1985: 10.8		1992: 11.8	Change: 1.0
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.5
Total requirements (000s):			2.5
Sex composition (1981)		Age composition (1981)	
Females:	3%	Under 25 years:	18%
Males:	97%	Over 54 years:	13%
All occ.		All occ.	
40%		25%	
60%		12%	

Employment is expected to grow at the average rate, based on the outlook in the Trade sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. The increased durability and falling prices of audio and video equipment have limited somewhat the job openings for repairers in service shops. This decrease is despite the surge in demand for such equipment, both in the home (computer and video game monitors) and as monitors in schools, production plants, and improved building security.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

**Cabinet and Wood Furniture Makers**

Examples: Cabinet Finisher  
 Gluer and Nailer  
 Joiner  
 Lay-Out Marker

Employment trends (000s) 1985: 25.1	1992: 27.8	Change: 2.7
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 2.9
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Total requirements (000s):	5.6
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 12%	40%	Under 25 years: 32%	25%
Males: 88%	60%	Over 54 years: 11%	12%

Employment is expected to grow at the average rate, based on the outlook in Furniture and Wood sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The increasing utility and decreasing prices of power tools have aided the task of furniture makers. A perceived trend towards fine wood products will open up some job possibilities, but a trend to mass production of furniture will limit job growth.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54 years, implying that the increases in labour demand owing to age-retirement may be moderate.

## 8581

**Motor Vehicle Mechanics and Repairers**

Examples: Motorcycle Repairer  
 Snowmobile Repairer  
 Transmission Mechanic  
 Tune-up Specialist  
 Truck-Trailer Mechanic  
 Motor-Vehicle Body Repairer  
 Automotive Brake and Front-End Mechanic

Average salaries, full-time employed two years after graduation (1984):

Community college: \$16,900

University: N/A

Employment trends (000s) 1985: 149.1                      1992: 163.7                      Change: 14.6

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 12.4

Total requirements (000s):                      27.0

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females:        1%	40%	Under 25 years:    31%	25%
Males:         99%	60%	Over 54 years:     7%	12%

Employment is expected to grow at the average rate, based on the outlook in Trade sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Prospects are best for those who are familiar with technological developments such as safety and protection devices, electronic gadgetry on the dashboard, computers in the engines as well as computer diagnosis. With the influx of foreign cars, other factors affecting this group are the metrification of auto parts and tools. As the percentage of steel used in car components declines, the increase of plastics (trunks, lids, hoods), new materials (bumpers, fenders, body panels) and ceramics (pistons, bearings, engines) may change the work organization and skills of mechanics and repairers.

Preparation and training for occupations in this group are through an apprenticeship program conducted in accordance with provincial standards. Certification is compulsory in most jurisdictions. Pre-employment training is provided in trades and vocational schools. The apprenticeship period is dependent on the individual's training and work experience. The period for qualification as a journeyman in this trade also varies from province to province.

At the 1981 Census, males were predominant in this occupational group. In addition, a below-average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large.

**Aircraft Mechanics and Repairers**

Examples: Hangar Mechanic  
 Helicopter Mechanic  
 Propeller Mechanic  
 Carburetor Mechanic

Employment trends (000s) 1985: 9.1	1992: 10.1	Change: 1.0
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.9
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Total requirements (000s):	1.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 23%	25%
Males: 99%	60%	Over 54 years: 11%	12%

Employment is expected to grow at the average rate, based on the outlook in Air Transport and Aircraft and Parts sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The number of private and commercial aircraft will grow with population and income, but labour-saving advances have limited the number of job openings for aircraft repairers. A greater emphasis on maintenance to deal with increasing energy costs and stringency of safety regulations may improve this occupational area. The establishment of two new helicopter plants in Quebec and Ontario may increase employment opportunities for helicopter mechanics in those provinces. Also, offshore oil and gas exploration has had an impact on helicopter usage.

Preparation and training for occupations in this group are through an apprenticeship program conducted in accordance with provincial standards. An alternative method of training is completion of relevant courses at a community college with on-the-job training. The apprenticeship period is dependent on the individual's training and work experience. The period for qualification also varies from province to province.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

8583

**Rail Transport Equipment Mechanics and Repairers**

Examples: Air-Brake Adjuster  
 Compressor Repairer  
 Railroad Mechanic  
 Service Restorer, Emergency  
 Valve Repairer

Employment trends (000s) 1985: 10.0	1992: 10.0	Change: 0.0
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.2
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Total requirements (000s):	1.2
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 20%	25%
Males: 99%	60%	Over 54 years: 18%	12%

Employment prospects in this group will depend on the outlook in the Rail Transport sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

At the 1981 Census, males were highly predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.



## Industrial, Farm and Construction Machinery Mechanics and Repairers

Examples: Caterpillar Repairer  
Linotype Repairer  
Diesel Mechanic  
Engineering-Equipment Mechanic  
Dairy Equipment Repairer  
Millwright

Average salaries, full-time employed two years after graduation (1984):

Average salaries, full time employed two years after graduation (1984):  
Community college: \$22,700                      University: N/A

Employment trends (000s)	1985: 92.9	1992: 102.1	Change: 9.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 10.2
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Total requirements (000s): 19.4

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 18%	25%
Males: 99%	60%	Over 54 years: 12%	12%

Employment is expected to grow at the average rate, based on the outlook of a wide range of industries where these occupations occur. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The increasing complexity of farm machinery (transmission and engines) and industrial equipment will lead to greater opportunities for those who do maintenance and repair work. Diesel mechanics, and smaller lawn and garden tractor repairers, and millwrights, should expect some opportunities as the need increases to maintain and care for lawns and gardens.

At the 1981 Census, males were highly predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

Preparation and training for occupations in this group are through an apprenticeship program conducted to provincial standards. Certification is voluntary in most jurisdictions for a number of occupations within this group. The apprenticeship period is dependent on the individual's training and work experience. The period for qualification as a journeyman in this trade also varies from province to province.



### Business and Commercial Machine Mechanics and Repairers

Examples: Accounting Machine Servicer  
Cash-Register Mechanic  
Computer Service Repairer  
Photo-Copy Machine Servicer  
Calculator Servicer

Employment trends (000s) 1985: 10.1		1992: 11.1		Change: 1.0
Estimated attrition due to labour force withdrawals (000s)				1985-92: 0.7
Total requirements (000s):				1.7
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	3%	40%	Under 25 years:	24%
Males:	97%	60%	Over 54 years:	6%
				12%

Employment prospects in this group will depend on the outlook in the Trade, Business Services and Machinery (including computers) sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Though business machines are becoming increasingly versatile as well as plentiful, the growing use of electronic components has made them more reliable and in need of less repair than previously. Copying machines have, to a certain extent, become self-diagnostic: users are able to make minor repairs themselves.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

**Watch and Clock Repairers**

Examples: Clock Reconditioner  
 Meter Repairer  
 Time-Lock Expert

Employment trends (000s) 1985: 2.3	1992: 2.5	Change: 0.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.7
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Total requirements (000s):	0.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 9%	40%	Under 25 years: 12%	25%
Males: 91%	60%	Over 54 years: 28%	12%

Employment prospects in this group will depend on the outlook in the Trade sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, occupations in this group experienced a decrease in their share of the workforce as a result of changes in technology and/or work organization.

The increasing durability and falling prices of watches have reduced the need to repair them, since if something does go wrong, they may be replaced quite cheaply. And as watches are now made of modular components, the time of repair and therefore the need for repairers is reduced. Alternatively, there is a market for the maintenance of expensive time pieces. The above projections are therefore likely to be overestimates of the employment growth in this group.

At the 1981 Census, males were predominant in this occupational group. In addition, a high percentage was older than 54, implying that the increases in labour demand owing to age-retirement may significant.

### Precision Instrument Mechanics and Repairers

Examples: Gyroscopic Instrument Mechanic  
 Camera Repairer  
 Gyroscope Repairer  
 Instrument Technician  
 Surgical Instrument Repairer  
 Instrument Repairer

Employment trends (000s) 1985: 4.4		1992: 5.0	Change: 0.6
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.4
Total requirements (000s):			1.0
Sex composition (1981)		Age composition (1981)	
Females:	4%	Under 25 years:	16%
Males:	96%	Over 54 years:	9%
All occ.		All occ.	
40%		25%	
60%		12%	

Employment is expected to grow at the average rate, based on the outlook in various Service and Manufacturing sectors, Trade and Miscellaneous Manufacturers (including plastics) sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The growing sophistications of thermostats and telemet ring instruments, and precision instruments used in medicine, laboratories and the aircraft industry, will mean a steady flow of job openings for this group.

Preparation and training for occupations in this group are through an apprenticeship program conducted to provincial standards. The provision is made for certification, but with completion of approved courses a certificate of apprenticeship is issued. The apprenticeship period is dependent on the individual's training and work experience. This period for qualification varies according to the province.

At the 1981 Census, males were highly predominant in this occupational group. In addition, a below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

**Other Mechanics and Repairers, Not Elsewhere Classified**

Examples: Auto Greaser  
 Crane Greaser  
 Fire Extinguisher Repairer  
 Gas Servicer  
 Gunsmith  
 Locksmith  
 Vending-Machine Servicer

Employment trends (000s) 1985: 19.7	1992: 22.0	Change: 2.3
Estimated attrition due to labour force withdrawals (000s)		1985-92: 2.5
Total requirements (000s):		4.8

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 2%	40%	Under 25 years: 28%	25%
Males: 98%	60%	Over 54 years: 13%	12%

Employment is expected to grow at the average rate, based on the outlook in Trade and Miscellaneous Services sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. This occupational group, encompassing small engine repairers, can be subject to various market fluctuations; for instance, the introduction of gas has had a downward influence on oil burner servicers, but the demand for gas servicers has increased.

Preparation and training for occupations in this group are through an apprenticeship program conducted to provincial standards. No provision is made for certification, but with completion of approved courses a certificate of apprenticeship is issued. The apprenticeship period is dependent on the individual's training and work experience. This period for qualification varies from province to province.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

8591

**Jewellery and Silverware Fabricating, Assembling and Repairing Occupations:**

Examples: Plater  
 Stonesetter  
 Gemologist  
 Goldsmith  
 Jeweller

Employment trends (000s) 1985: 5.3		1992: 6.2	Change: 0.9
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.8
Total requirements (000s):			1.7
Sex composition (1981)		Age composition (1981)	
Females:	34%	All occ.	
		Under 25 years:	21%
Males:	66%	Over 54 years :	11%
			25%
			12%

Employment is expected to grow at an average rate, based on the outlook in the Miscellaneous Manufacturers (including plastics) and Trade sectors, where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Rising incomes leading to higher sales of new and old jewellery will open some job opportunities for repairers.

Preparation and training for occupations in this group are through an apprenticeship program conducted to provincial standards. No provision is made for certification in this occupation, but with completion of approved courses a certificate of apprenticeship is issued. The apprenticeship period is dependent on the individual's training and work experience. This period for qualification varies from province to province.

Those colleges currently offering courses for this occupation group include: Sheridan College, Oakville; George Brown College, Toronto; Southern Alberta College of Art, Calgary; Nova Scotia College of Art, Halifax.

At the 1981 Census, males represented a majority in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

The geographical distribution of this occupation is also a factor to be taken into consideration. Half (50.0%) of its workforce was located in Ontario at the time of the 1981 Census.



**Marine Craft Fabricating, Assembling and Repairing Occupations**

Examples: Shipwright  
 Marine Machinist  
 Loft Rigger  
 Outboard-Motor Mechanic

Employment trends (000s) 1985: 7.7	1992: 8.9	Change: 1.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 1.1
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Total requirements (000s):	2.3
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 3%	40%	Under 25 years: 24%	25%
Males: 97%	60%	Over 54 years: 14%	12%

Employment is expected to grow at an average rate, based on the outlook in the Shipbuilding and Repair and Miscellaneous Transport/Equipment sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. The demand for this occupational group may improve somewhat with increased activity in offshore oil and gas exploration in the Atlantic Provinces, and as more ship repair and maintenance is undertaken as opposed to building new vessels.

Preparation and training for occupations in this group are through an apprenticeship program conducted to provincial standards. No provision is made for certification, but with completion of approved courses a certificate of apprenticeship is issued. The apprenticeship period is dependent on the individual's training and work experience. This period for qualification varies according to the jurisdiction.

At the 1981 Census, males were highly predominant in this occupational group. In addition, an above-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.



8711

**Excavating, Grading and Related Occupations**

Examples: Cat Operator  
 Heavy Equipment Operator  
 Grader Operator  
 Back-Hoe Operator  
 Pipe Layer

Employment trends (000s) 1985: 43.6		1992: 47.8	Change: 4.2
Estimated attrition due to labour force withdrawals (000s)			1985-92: 4.5
Total requirements (000s):			8.7
Sex composition (1981)		Age composition (1981)	
Females:	1%	Under 25 years:	17%
Males:	99%	Over 54 years:	10%
All occ.		All occ.	
40%		25%	
60%		12%	

Operating engineers are employed in nearly all sectors of construction to prepare the construction site, using heavy equipment to move earth. Employment in construction is expected, on a national basis, to grow at the average rate. In addition to direct construction work, these occupations are employed in road maintenance, agriculture and other roles. Operating engineers who are employed in the construction industry are subject to cyclical swings in employment levels.

Technological advances in the form of improvements in the machinery operated by this group have tended to increase productivity. Offsetting this effect on employment is the trend toward more-ambitious construction projects requiring more-intensive site preparation. Since the work of operating engineers is exposed to the elements, employment is seasonal. Training is given by employer on-the-job programs or apprenticeship. Certification is compulsory in Quebec.

At the 1981 Census, males were almost exclusive to this occupational group. In addition, a relatively small proportion was older than 54 years, implying that the increases in labour demand owing to age-retirement may be moderate.

This occupation is currently facing labour market conditions that are not very favorable, as indicated by its higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

Electrical Power Line Workers and Related Occupations

Examples: Lineman  
Power Lineman

Employment trends (000s) 1985: 10.6	1992: 12.1	Change: 1.5
Estimated attrition due to labour force withdrawals (000s)		1985-92: 0.8
Total requirements (000s):		2.3

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 17%	25%
Males: 99%	60%	Over 54 years: 7%	12%

Linemen are employed in construction and by utilities for maintenance and repair work. Employment is expected to grow at the average rate. The trade is subject to major changes in regional employment patterns as utilities construct new transmission lines. For this reason, construction linemen must be highly itinerant, moving from region to region.

Technological changes have occurred affecting the trade, but these changes have not significantly affected employment. More significant is the ability of employers to substitute less-skilled labour for linemen, a factor that is of regional importance. Linemen must work at considerable heights without undue discomfort and must have superior agility and balance. There is a seasonal aspect to the employment of linemen owing to climatic constraints. Training is via apprenticeship.

At the 1981 Census, males were almost exclusive to this occupational group. In addition, a relatively low proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

8733

**Construction Electricians and Repairers**

Examples: Construction Electrician  
Wireman  
Wiring Electrician

Employment trends (000s) 1985: 45.5		1992: 49.2	Change: 3.7
Estimated attrition due to labour force withdrawals (000s)			1985-92: 3.5
Total requirements (000s):			7.2
Sex composition (1981)		Age composition (1981)	
Females:	1%	All occ.	
		40%	
Males:	99%	60%	
		Age composition (1981)	All occ.
		Under 25 years:	29%
		Over 54 years:	8%
			25%
			12%

Construction electricians are employed in all sectors of the construction industry on new and repair work. In this capacity, employment of electricians is expected to grow at less than the average rate, on a national basis. In addition, other industries employ electricians in a maintenance capacity and for non-contract construction work. Construction electricians encounter cyclical variations in employment as a result of the investment cycle.

The employment effects of recent technological change have not been significant. However, new skills, especially in electronics and instrumentation, are increasingly required. In some regions, employment opportunities will occur owing to turnover and the fact that the group's labour force is relatively large. Apprenticeship provides the training for the trade. Compulsory certification is in effect in PEI, New Brunswick, Quebec, Nova Scotia, Ontario, Saskatchewan and in parts of Newfoundland.

At the 1981 Census, males were almost exclusive to this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

### Wire Communications and Related Equipment Installing and Repairing Occupations

Examples: Branch Exchange Repairer  
Telephone Facilities Evaluator  
Line Installer  
Telephone Technician  
Protective Signal Installer

Average salaries, full-time employed two years after graduation (1984): Community College: \$24,000  
University: N/A

Employment trends (000s) 1985: 33.1                      1992: 35.6                      Change: 2.5

Estimated attrition due to labour force withdrawals (000s)                      1985-92: 2.0

Total requirements (000s):                      4.5

Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 6%	40%	Under 25 years: 26%	25%
Males: 94%	60%	Over 54 years: 5%	12%

Employment is expected to grow at less than the average rate, based on the outlook in the Telephone and Telegraph sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The impact of technology in telecommunications occupations has been widespread both in 'outside craft' (those installing lines and telephones) and 'inside craft' (those installing and fixing switches). There is now widespread introduction of the computer as a switching device to replace the old electromechanical switching systems. Switches route phone traffic through the network. The earlier electromechanical switches needed considerable routine maintenance. The skills required by these repairmen were electrical, mechanical and analytical for diagnosis. Now electronic switches use electronic circuitry and computer technology to do traffic routing. The need for diagnosis and trouble shooting is engineered into the equipment, and the need for maintenance has been considerably reduced.

Some job openings will be created by demand for telephone, switchboard, data transmission, burglar alarms, fire detectors, and cable television services. However, opportunities may be limited somewhat by such technological advances as satellites, microwave systems, fibre optics and pre-wired buildings.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

## 8736

**Inspecting, Testing, Grading and Sampling Occupations:  
Electrical Power, Lighting and Wire Communications Equipment  
Erecting, Installing and Repairing**

Examples: Line Inspector  
Telecom  
Powerline Patroller  
Load Checker  
Test-table Operator  
Switch Inspector

Employment trends (000s) 1985: 4.7	1992: 5.3	Change: 0.6
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.6
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Total requirements (000s):	1.2
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 15%	40%	Under 25 years: 16%	25%
Males: 85%	60%	Over 54 years: 12%	12%

Employment is expected to grow at the average rate, based on the outlook in the Telephone and Telegraph, Electrical Power and Electrical/Electronic Products sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The widespread introduction of the computer as a switching device to replace the old electromechanical switching systems has meant that diagnosis is engineered into the equipment. Within the telephone and telegraph sector, this new technology has led to fewer inspectors being needed because of ongoing centralized switching control centres.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.



## Carpenters and Related Occupations

Examples: Carpenter  
Joiner  
Framer  
Form Builder  
Maintenance Carpenter

Employment trends (000s) 1985: 107.2		1992: 112.5	Change: 5.3
Estimated attrition due to labour force withdrawals (000s)			1985-92: 15.0
Total requirements (000s):			20.3
Sex composition (1981)		Age composition (1981)	
Females:	1%	Under 25 years:	21%
Males:	99%	Over 54 years:	15%

Employment in these occupations are concentrated in the construction industry, although some carpenters are employed in other industries for maintenance and non-contract construction. On a national basis, occupational employment is expected to grow faster than the average rate. However, there may be some regional variation in this respect. Employment levels experience some variation owing to the cyclical nature of construction activity brought about by changing business conditions. Carpenters find employment in both the residential and non-residential sectors of the construction industry; however, self-employment on a contract basis is not uncommon.

Technological change in the form of new methods of construction and new building materials is expected to influence employment over the forecast period through increased productivity. Job openings in most regions are expected to result from high levels of turnover owing in part to the transitory nature of construction employment. Carpentry work is done both inside and outside, and so is influenced by climatic conditions, but seasonal effects will vary from region to region. Entry to the trade has traditionally been through apprenticeship, with persons who have completed a full apprenticeship generally having better employment opportunities. Certification is compulsory in Saskatchewan and Quebec.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.



## 8782

**Brick and Stone Masons and Tilesetters**

Examples: Bricklayer  
 Stone Mason  
 Tilesetter  
 Furnace Mason

Employment trends (000s) 1985: 18.3		1992: 19.1	Change: 0.8
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.8
Total requirements (000s):			2.6
Sex composition (1981)		Age composition (1981)	
Females:	1%	Under 25 years:	18%
Males:	99%	Over 54 years:	11%

Employment of bricklayers and masons is concentrated in the construction industry and undergoes variation owing to the influence of the business cycle on investment in construction. Employment in these trades is expected to grow less than the average rate, on a national basis. The masonry occupations are employed in residential, non-residential and engineering construction; many masons are self-employed on a contract basis.

Employment in this occupational group has not been significantly influenced by technological change. However, the increasing popularity of brick and other masonry construction will tend to increase employment of those working with these materials. Opportunities for stone masons will be more limited owing to the cost of stone as a building material. The outlook for tilesetters is good since the use of tile has spread from the kitchen and bathroom to other rooms in the home as well as to restaurants and offices. Much of the work of bricklayers and masons is done outside, resulting in a pronounced seasonality in employment levels. The primary method of training is apprenticeship. Certification of masons is compulsory in Newfoundland, Nova Scotia, Quebec and New Brunswick (bricklaying only).

At the 1981 Census, males were extremely predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.



8784

**Plasterers and Related Occupations**

Examples: Plasterer  
 Drywall Installer  
 Lather  
 Stucco Plasterer

Employment trends (000s) 1985: 13.9		1992: 14.0	Change: 0.1
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.9
Total requirements (000s):			1.0
Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 24%	25%
Males: 99%	60%	Over 54 years: 6%	12%

Employment of this occupational group is concentrated in building construction and is prone to cyclical variation owing to changing business and investment conditions. On a national basis, employment of this trade is expected to show little growth. Unemployment can be widespread during times of slack demand for construction. Changing building technology has contributed to a marked decline in the demand for plastering skills as drywall construction has replaced more traditional building techniques. Home renovation will provide some employment opportunities. Since much plastering and drywall work is performed indoors, seasonal variation in employment is not as pronounced as in some other construction trades. Apprenticeship provides the most common means of training for these occupations. Certification is compulsory in Quebec.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

**Painters, Paperhangers and Related Occupations**

Examples: Painter  
 Paperhanger  
 Decorator

Employment trends (000s) 1985: 32.4		1992: 33.7	Change: 1.3
Estimated attrition due to labour force withdrawals (000s)			1985-92: 4.0
Total requirements (000s):			5.3
Sex composition (1981)		Age composition (1981)	
Females:	6%	Under 25 years:	26%
Males:	94%	Over 54 years:	12%
All occ.		All occ.	
40%		25%	
60%		12%	

Employment of painters and decorators is provided by new construction activity and by the renovation and maintenance of existing structures.

Employment is expected to grow at less than the average rate. The dual role of the painting and decorating trade results in less cyclical variation in employment than is the case for many of the construction occupations. In times of slow business activity, however, periods of unemployment may be common for painters.

Technological change, such as the advent of power spray painting, has changed the skills required of painters, although new techniques have not resulted in a significant change in the occupational share of the construction workforce over the last decade. The traditional means of entry to this occupation have been apprenticeship. Certification is compulsory in Quebec and Saskatchewan.

At the 1981 Census, males were predominant in this occupational group. In addition, an average proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be moderate.

These occupations are currently facing labour market conditions that are not very favorable as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

8786

**Insulating Occupations, Construction**

Examples: Heat and Frost Insulator  
 Insulation Installer  
 Asbestos Worker

Employment trends (000s) 1985: 5.8		1992: 6.2	Change: 0.4
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.4
Total requirements (000s):			0.8
Sex composition (1981)		Age composition (1981)	
Females:	3%	Under 25 years:	35%
Males:	97%	Over 54 years:	7%

Employment of the insulating occupations is distributed among several industries, with the construction industry accounting for approximately 75 per cent of the total. Employment is expected to grow at less than the average rate, on a national basis. Heat and frost insulators in the construction industry are subject to cyclical periods of unemployment owing to peaks and troughs in construction investment. Construction insulators are employed primarily in non-residential building construction. Insulators work with hazardous materials and must take appropriate precautions.

Technological change has not caused a shift in the proportional occupational share of construction industry employment over the past decade. Higher standards of insulating and energy efficiency in new construction have created employment opportunities. The discontinuation of the CHIP program in 1985 may have negative implications for employment of insulators in the next several years. Training for the occupation is via apprenticeship. Certification is compulsory in Quebec.

At the 1981 Census, males were highly predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.



### Roofing, Waterproofing and Related Occupations

Examples: Roofer  
Waterproofer  
Shingler

Employment trends (000s) 1985: 9.1	1992: 9.5	Change: 0.4
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.6
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Total requirements (000s):	1.0
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 2%	40%	Under 25 years: 35%	25%
Males: 98%	60%	Over 54 years: 6%	12%

Roofers are employed primarily in the construction industry; the total volume of work is divided between new construction, and repairs and renovation. The latter activity, re-roofing, contributes to making employment in this occupation somewhat less sensitive to cyclical swings in investment in construction. Employment of roofers is expected to grow at less than the average rate. Roofers must work with hazardous materials under uncomfortable conditions, often for long periods of time. The work is highly seasonal, being affected by weather conditions. Training is available through apprenticeship. Certification is compulsory in British Columbia and Quebec.

Technological change has not caused the occupational share of construction industry employment to change significantly over the last decade, although new materials and methods have been adopted.

At the 1981 Census, males were highly predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.



8791

**Pipefitting, Plumbing and Related Occupations**

Examples: Plumber  
 Pipefitter  
 Steamfitter  
 Sprinklerfitter  
 Gasfitter

Employment trends (000s) 1985: 43.4	1992: 46.7	Change: 3.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 4.5
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Total requirements (000s):	7.8
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 19%	25%
Males: 99%	60%	Over 54 years : 11%	12%

The construction industry accounts for roughly half of the employment of the piping trades. Employment of occupational group, on a national basis, is expected to grow at less than the average rate for all occupations. New construction, and repair and maintenance work is routine for these occupations in all major sectors of construction — residential, non-residential building and engineering. Employment in the piping trades is subject to cyclical fluctuations, but this is cushioned, to a degree, by work needed on existing piping. The work performed by the plumbing occupations can be physically difficult and is often done in cramped, uncomfortable conditions. There is a seasonal fluctuation in the availability of work in the piping trades. Apprenticeship is the normal source of training for this occupational group. Certification is compulsory for one or more of the piping trades in Newfoundland, PEI, Nova Scotia, New Brunswick, Quebec, Ontario, Alberta and British Columbia.

Technological change has had an impact on the kinds of methods and materials used, although over the last 10 years, this has not led to a significant change in the proportional occupational share of the construction workforce.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.

**Structural Metal Erectors**

Examples: Ironworker-Structural  
Ironworker-Reinforcing  
Steel Constructor

Employment trends (000s) 1985: 7.8	1992: 8.6	Change: 0.8
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.5
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Total requirements (000s):	1.3
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 24%	25%
Males: 99%	60%	Over 54 years: 7%	12%

Structural metal erectors are employed principally in the construction industry but are also required in metal fabricating, oil and gas production, iron and steel production, electric utilities and rail transport. Taken together, total employment of this occupation in these industries is expected to grow at an average rate. Construction ironworkers, employed in the construction industry, account for slightly less than one-half of the employed stock of structural metal erectors. Ironworkers are employed in the non-residential building and engineering sectors of the construction industry. Employment is subject to cyclical fluctuations. Construction ironworkers fulfill two main functions: they erect steel structures as structural ironworkers and they assemble steel reinforcing rods for reinforced concrete as reinforcing ironworkers. Both kinds of work require physical strength and agility. Structural ironwork entails work at considerable heights and therefore is dangerous, requiring safety precautions.

Technological change has not had a significant employment impact in recent years. Ironwork employment is highly seasonal and structural ironworkers, in particular, must be mobile, travelling from project to project within and between regions. Training for ironwork is provided by apprenticeship.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

## 8795

**Glaziers**

Examples: Glazier  
Glass Installer  
Windshield Repairer

Employment trends (000s) 1985: 5.1	1992: 5.4	Change: 0.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.3
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Total requirements (000s):	0.6
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 4%	40%	Under 25 years: 34%	25%
Males: 96%	60%	Over 54 years: 5%	12%

Glaziers are employed to install new glass in both new and existing buildings. Vehicle glass repair also represents a portion of the employment of this occupational group. Employment of glaziers, on a national basis, is expected to grow at less than the average rate. The significant volume of glass replacement work renders the occupation less prone to sharp cyclical swings in employment, although times of low construction demand bring about unemployment.

New methods of installing glass in buildings have affected the employment of glaziers in the recent past and may continue to be a factor in the occupational employment picture. Employment opportunities will result from the retrofitting of double and triple glazed windows as a measure to increase the energy efficiency of buildings. The normal source of training in this trade is apprenticeship. Certification is compulsory in Quebec.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively small proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

These occupations are currently facing labour market conditions that are not very favorable, as indicated by their higher-than-average U.I. claimant rate and by the absence of any hard-to-fill vacancies.

**Air Pilots, Navigators and Flight Engineers**

Examples: Aircraft Captain  
 Commercial Pilot  
 Helicopter Pilot  
 Mapping Pilot

Employment trends (000s) 1985: 6.7		1992: 7.2	Change: 0.5	
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.4	
Total requirements (000s):			0.9	
Sex composition (1981)		All occ.	Age composition (1981)	
Females:	3%	40%	Under 25 years:	14%
Males:	97%	60%	Over 54 years:	5%
				25%
				12%

Employment is expected to grow at less than the average rate, based on the outlook in the Air Transport sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be particularly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Ongoing deregulation in the airline industry may have several short-term effects on this group as adjustments are made to adapt to a more competitive environment. As airlines offer new routes, some openings may occur with smaller regional carriers as larger airlines continue to increase load factors and reduce operating costs.

At the 1981 Census, males were highly predominant in this occupational group.

## 9131

**Locomotive Operating Occupations**

Examples: Locomotive Engineer  
 Engineer Assistant  
 Locomotive Inspector  
 Road Freight Engineer  
 Outside Hostler  
 Switch Engineer

Employment trends (000s) 1985: 7.4		1992: 7.4	Change: 0.0
Estimated attrition due to labour force withdrawals (000s)			1985-92: 1.3
Total requirements (000s):			1.3
Sex composition (1981)		Age composition (1981)	
Females:	2%	Under 25 years:	8%
Males:	98%	Over 54 years:	25%
All occ.		All occ.	
40%		25%	
60%		12%	

Employment prospects in this group will depend on the outlook in the Rail Transport sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Some increased rail traffic may be expected from the Crow rate changes and possible double-tracking. However, with ongoing deregulation, sector railway companies are becoming more competitive with other forms of transportation, particularly trucking, by developing and marketing intermodal services. Computerized operating systems — such as advanced train control in modular units, microprocessors and digital technology for train inspection, locomotive performance monitoring and on-board diagnostics — will result in higher productivity but fewer employment opportunities.

At the 1981 Census, males were highly predominant in this occupational group. In addition, a considerable proportion was older than 54, implying that increases in labour demand owing to age-retirement may be significant, or attrition could be the way of increasing employment.







## 9153

**Engineering Officers, Ship**

Examples: Chief Marine Engineer  
 Diesel Engineer Officer  
 Tugboat Engineer

Employment trends (000s) 1985: 2.5	1992: 2.7	Change: 0.2
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.4
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Total requirements (000s):	0.6
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 7%	25%
Males: 99%	60%	Over 54 years: 21%	12%

Employment is expected to grow at less than the average rate, based on the outlook in Water Transport and Related Services and Public Administration sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be highly sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Job openings are regional, confined mainly to the coasts and Great Lakes of Canada. Marine human resource requirements may be related to offshore oil and gas activity in the Venture natural gas development off Nova Scotia and the Hibernia field off St. John's, Newfoundland. Supply vessels will be used to service and provide safety and emergency operations to each new rig. The estimate of approximately three supply vessels for each rig may contribute to demand for this occupation.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

**Bus Drivers**

Examples: School Bus Driver  
Bus Operator

Employment trends (000s) 1985: 49.2	1992: 61.3	Change: 12.1
Estimated attrition due to labour force withdrawals (000s)		1985-92: 9.3

Total requirements (000s):	21.4
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Sex composition (1981)		Age composition (1981)	
	All occ.		All occ.
Females: 25%	40%	Under 25 years: 6%	25%
Males: 75%	60%	Over 54 years: 16%	12%

Employment is expected to grow faster than the average rate, based on the outlook in the Miscellaneous Transport/Storage sector where these occupations are concentrated. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Increased ridership on growing intra-city transit will open up some jobs, but the use of larger buses may limit opportunities somewhat. The demand for long-distance, inter-city bus transport is fairly insensitive to swings in the economy, resulting in steady demand for bus drivers of this type. Given expected gains in elementary school enrolment, the prospects for school bus drivers, often a part-time occupation, seem good.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively large proportion was older than 54, implying that the increases in labour demand owing to age-retirement may be large.

# 9175

## Truck Drivers

Examples: Armoured-Car Driver  
Auto-Carrier Driver  
Oil Truck Driver  
Garbage-Truck Driver  
Moving-Van Driver

Employment trends (000s) 1985: 247.4	1992: 293.4	Change: 46.0
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 23.3
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Total requirements (000s):	69.3
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 3%	40%	Under 25 years: 23%	25%
Males: 97%	60%	Over 54 years: 8%	12%

Employment prospects in this group will depend on the outlook in Miscellaneous Transport/Storage and Trade sectors where the occupation is concentrated. Reflecting the employment patterns of this sector, the occupation may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

Larger trucks will limit job opportunities in this category to less than would have been expected from the increased demand for interprovincial trucking. A factor that may limit this occupation's growth is aggressive competition from the railway as successful piggyback services continue between Montreal and Toronto. The growth of regional truckers (Ontario) has also been limited owing to increased intermodal competition and deregulation in the United States.

At the 1981 Census, males were highly predominant in this occupational group. In addition, a below-average proportion was older than 54, implying that increases in labour demand due to age-retirement may not be large.

This occupation is currently facing labour market conditions that are not very favorable, as indicated by its higher-than-average U.I. claim rate and by the absence of any hard-to-fill vacancies.

For further information, contact:

Canadian Trucking Association  
130 Albert Street  
Suite 300  
Ottawa, Ontario  
K1P 5G4  
(613) 236-9426

## Printing Press Occupations

Examples: Lithographic Press Operator  
 Flexographic Press Operator  
 Rotogravure Press Operator  
 Letterpress Operator

Employment trends (000s) 1985: 24.5		1992: 27.0	Change: 2.5
Estimated attrition due to labour force withdrawals (000s)			1985-92: 2.1
Total requirements (000s):			4.6
Sex composition (1981)		Age composition (1981)	
Females:	11%	40%	25%
Males:	89%	60%	12%
		Under 25 years:	27%
		Over 54 years:	9%

Employment prospects in this group will depend on the outlook in Printing and Publishing sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may not be particularly sensitive to changing economic conditions. A rapidly growing demand for printed material may create some job openings, but the use of high-speed equipment containing microprocessors have limited job growth.

Based on an industry report, employment trends will differ within printing press occupations. Moderate growth is expected for lithographic press operators as offset lithography is now the main process used in the commercial printing industry.

The growth of flexographic printing used in the production of flexible packaging and for imprinting is expected to be moderate. But as this process continues to be refined it could become more competitive with lithography. Employment growth in lithography may be limited.

Copper-plate or rotogravure is used for long-run printing such as catalogues, newspaper inserts and high-quality folding cartons. Some growth is expected in the folding carton market. Those printing processes in the traditional long-run markets that have incorporated certain aspects of lithography such as press size, speed and plate life are not expected to grow very much in the future. The use of letterpress printing has declined and it is not expected to be a factor in the commercial printing industry.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively low proportion was older than 54, implying that the increases in labour demand owing to age-retirement may not be large.

For further information, contact:

Council of Printing Industries of Canada  
 620 University Avenue  
 11th Floor  
 Toronto, Ontario  
 M5G 2C1  
 (416) 591-1509

Graphic Arts Industries Association  
 75 Albert Street  
 Suite 906, Fuller Bldg.  
 Ottawa, Ontario  
 K1P 5E7  
 (613) 236-7208

### Photoengraving and Related Occupations

Examples: Camera Operator  
 Dot-Etcher  
 Stripper  
 Plate Maker  
 Textile Engraver  
 Rotogravure Cylinder Technician  
 Scanner Operator  
 Electronic Pre-Press Technician

Employment trends (000s) 1985: 2.8	1992: 3.1	Change: 0.3
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.3
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Total requirements (000s):	0.6
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 18%	40%	Under 25 years: 23%	25%
Males: 82%	60%	Over 54 years: 8%	12%

Employment is expected to grow at the average rate, based on the outlook in Printing and Publishing sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be particularly sensitive to changing economic conditions. The continuing shift to offset printing from letterpress will limit chances for employment of photoengravers who are employed only by the letterpress process. The application of laser technology, however, in plate production may offer opportunities to photoengravers.

Electronic pre-press technicians are those who operate computer-controlled devices capable of performing complicated 4-colour stripping and retouching operations. Based on an industry report, moderate growth is expected in the pre-press area. Because of differences in film preparation techniques used in the making of printing surface, additional skills are required. Therefore, personnel are now being retrained to be able to prepare film for all processes.

At the 1981 Census, males were predominant in this occupational group. In addition, a below-average proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

For further information, contact:

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**Power Station Operators**

Examples: Diesel Plant Operator  
 Generating Station Operator  
 Hydro Operator  
 Nuclear-Reactor Operator

Employment trends (000s) 1985: 6.5	1992: 7.5	Change: 1.0
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.7
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Total requirements (000s):	1.7
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<b>Sex composition (1981)</b>	<b>All occ.</b>	<b>Age composition (1981)</b>	<b>All occ.</b>
Females: 5%	40%	Under 25 years: 17%	25%
Males: 95%	60%	Over 54 years: 11%	12%

Employment prospects in this group will depend on the outlook in the Electric Power sector where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes.

The wider use of telemetering instruments, automation and centralized equipment will limit job opportunities. Also, as the electrical generating capacity has outstripped demand and the number of power stations stabilize, the occupational growth projections listed here may be overestimates.

At the 1981 Census, males were highly predominant in this occupational group. In addition, an average proportion was older than 54, implying that increases in labour demand owing to age-retirement may be moderate.



9539

### Stationary Engine and Utilities Equipment Operating and Related Occupations, Not Elsewhere Classified

Examples: Cooling System Operator  
 Dam Attendant  
 Incinerator Operator  
 Inspector, Sewage Disposal  
 Purification Plant-Operator

Employment trends (000s) 1985: 33.8	1992: 37.8	Change: 4.0
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 5.5
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Total requirements (000s):	9.5
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 1%	40%	Under 25 years: 15%	25%
Males: 99%	60%	Over 54 years: 19%	12%

Employment prospects in this group will depend on the outlook in a wide range of sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be moderately sensitive to changing economic conditions. In the 1970s, the share of the workforce held by this group was not significantly affected by technological or organizational changes. Occupations in this category include operators of stationary engines, water and sanitation utilities equipment and pumping and pipeline equipment. The fact that such equipment is being increasingly operated from a centralized console may limit job opportunities in this group, and therefore occupational growth projections listed here may be overestimates.

At the 1981 Census, males were extremely predominant in this occupational group. In addition, a relatively high proportion was older than 54, implying that increases in labour demand owing to age-retirement may be large.

**Radio and Television Broadcasting Equipment Operators**

Examples: Broadcast Engineer  
 Studio Control Operator  
 Telecasting Engineer  
 Transmitter Engineer  
 Video Operator  
 Video Control Engineer

Employment trends (000s) 1985: 4.2	1992: 4.8	Change: 0.6
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Estimated attrition due to labour force withdrawals (000s)	1985-92: 0.3
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Total requirements (000s):	0.9
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Sex composition (1981)	All occ.	Age composition (1981)	All occ.
Females: 17%	40%	Under 25 years: 33%	25%
Males: 83%	60%	Over 54 years: 3%	12%

Employment is expected to grow at the average rate, based on the outlook in Radio and Television Broadcasting sectors where these occupations are concentrated. Reflecting the employment patterns of this sector, these occupations may be moderately sensitive to changing economic conditions. A proliferation of cable and radio stations and the large-scale use of videos because of their relatively low cost should create some job opportunities. However, the growth of computer-controlled equipment and remote-controlled transmitters may limit the number of job openings.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively low proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

**9555****Sound and Video Recording and Reproduction Equipment Operators**

Examples: Disk Recordist  
 Recording Engineer  
 Sound Editor  
 Station Engineer  
 Studio Technician

Employment trends (000s) 1985: 2.4		1992: 2.9	Change: 0.5
Estimated attrition due to labour force withdrawals (000s)			1985-92: 0.1
Total requirements (000s):			0.6
Sex composition (1981)		Age composition (1981)	
Females:	13%	All occ.	40%
Males:	87%	Under 25 years:	24%
		Over 54 years:	4%
		All occ.	25%
			12%

Employment is expected to grow at faster than the average rate, based on the outlook in Radio and Television Broadcasting, Recreation Services and Education Services sectors where these occupations are concentrated. Reflecting the employment patterns of these sectors, these occupations may be highly sensitive to changing economic conditions. In the 1970s, occupations in this group experienced an increase in their share of the workforce as a result of changes in technology and/or work organization. The growing number of cablevision stations doing their own production, radio stations extending their hours, and recording studios being established provide some job opportunities for this occupational group.

At the 1981 Census, males were predominant in this occupational group. In addition, a relatively low proportion was older than 54, implying that increases in labour demand owing to age-retirement may not be large.

The geographical distribution of these occupations is also a factor to be taken into consideration. Over half (51.9%) of their workforce was located in Quebec at the time of the 1981 Census.























